Water Conditions Summary

Operations Control, Maintenance Engineering & Vegetation Management Department

Operations & Maintenance Resource Area

Governing Board Presentation

October 10, 2002

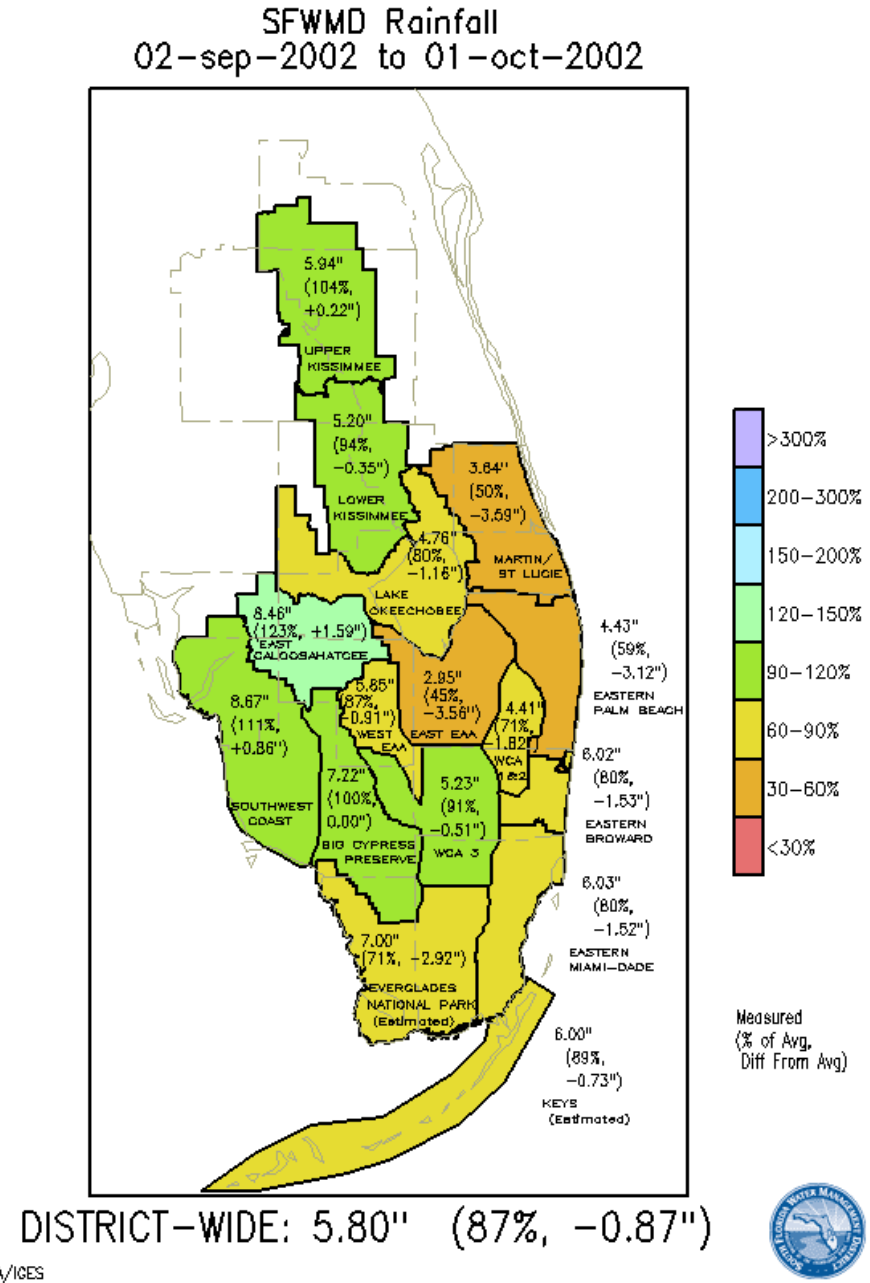
Meteorological Conditions

Governing Board Presentation - October 10, 2002

Meteorological Conditions

- **September exhibited below average rainfall District-wide**
- September Rainfall : District-wide rainfall was 87% of average
  - Normal Rainfall: 6.67 inches
  - Actual Rainfall: 5.78 inches
  - Est. Pan Evaporation: 4.50 inches
- October Rainfall : To-date District-wide rainfall is 15% of average

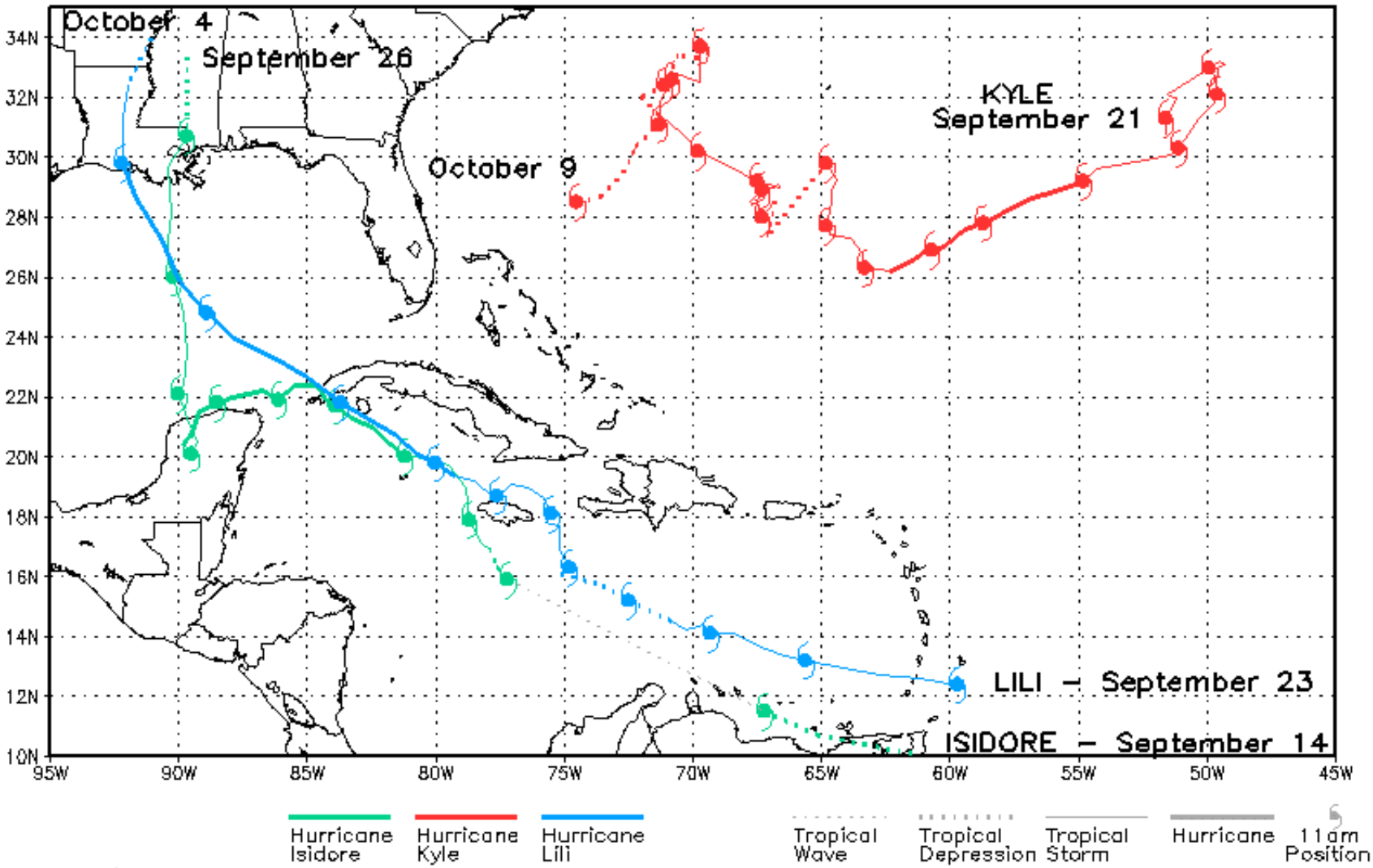
- Most areas of the District received below average rainfall in September.
- Normal conditions persisted in the Kissimmee Basin as well as WCA-3A & the Lower West Coast



2002 Hurricane Season Status

Category	Predicted	Average	To Date
Named Storms	8	9	12
Hurricanes	3	6	4
Strong Hurricanes	1	2	2

Hurricanes Isidore, Kyle, & Lili
September 14 – October 9, 2002



General Hydrologic Conditions

Governing Board Presentation - October 10, 2002

General Hydrologic Conditions

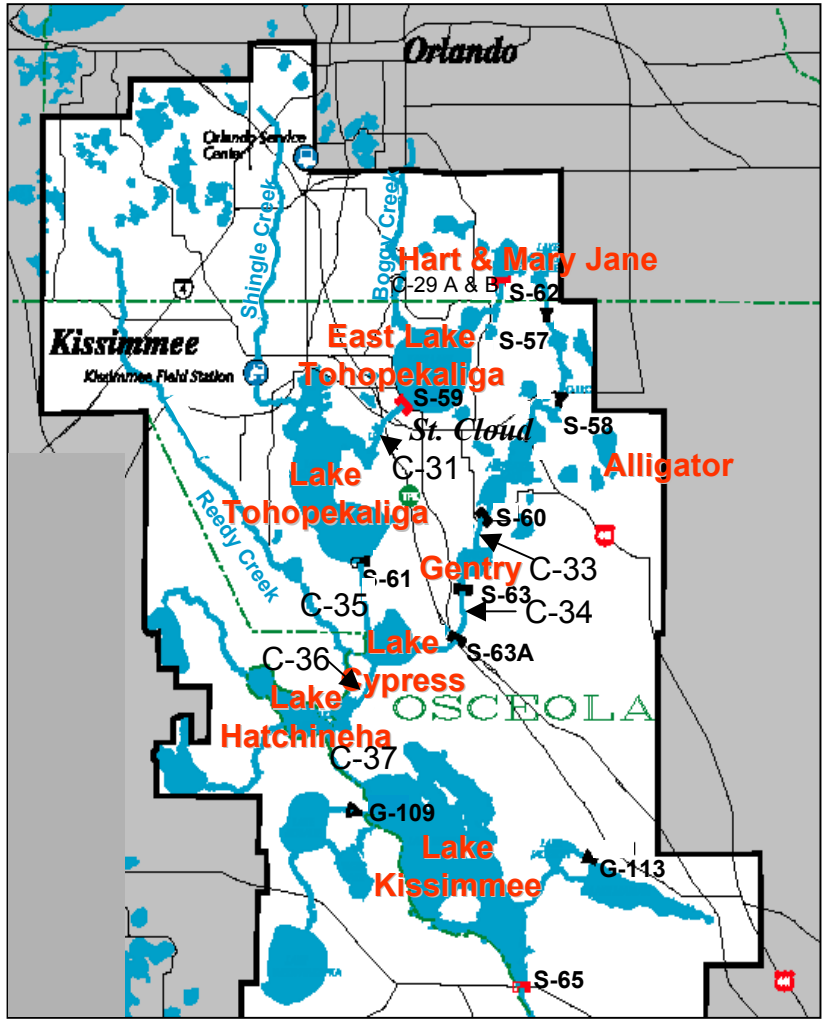
- G **Upper Chain** - High seasonal levels
- G **Kissimmee River** - Normal seasonal levels
- Y **Lake Okeechobee** - Above desirable stage
- G **Lake Okeechobee Agriculture**
- Y **Estuaries** - Low salinity

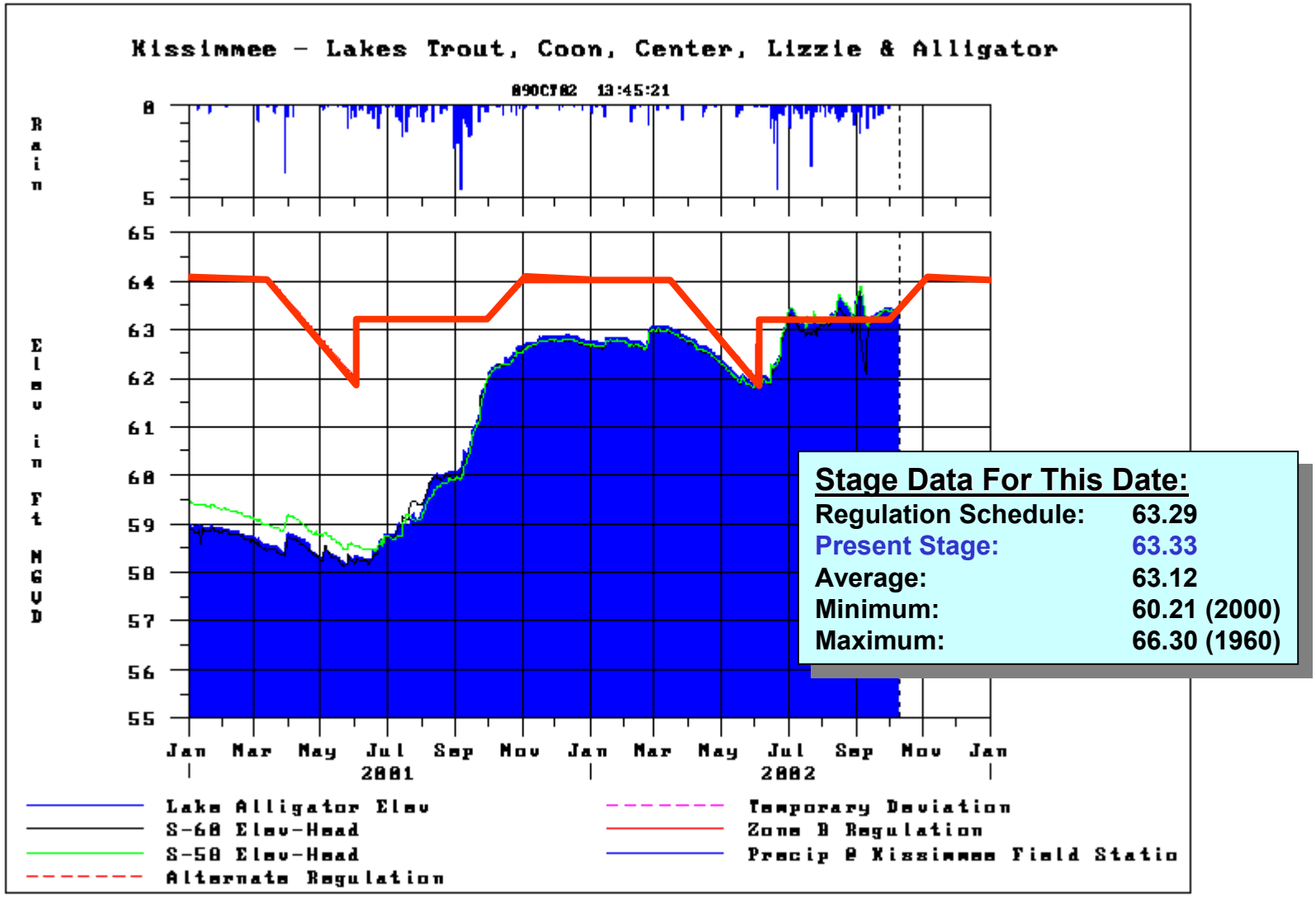
General Hydrologic Conditions

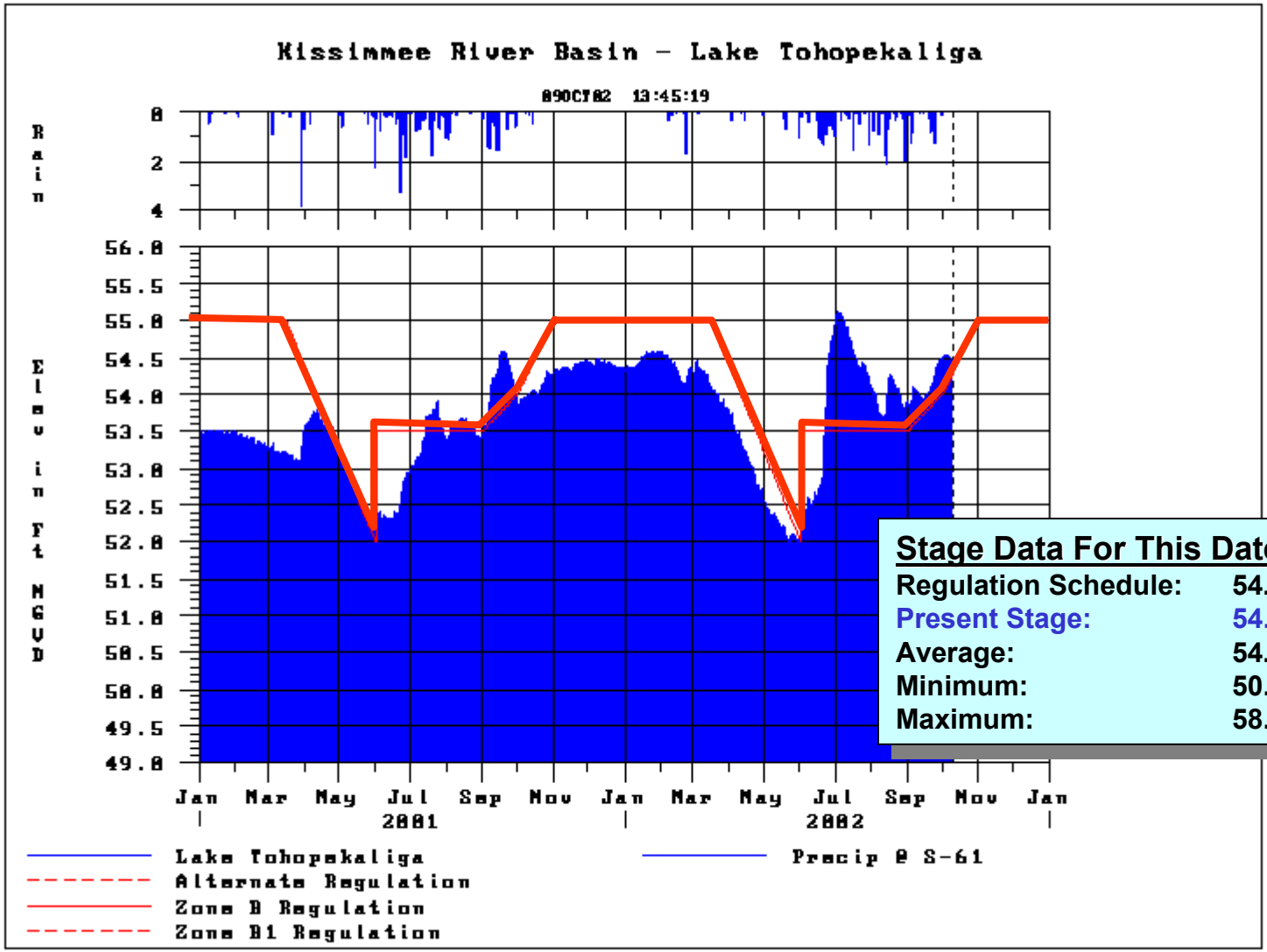
- **Water Conservation Area 1** - Below Sched.
- **Water Conservation Area 2** - At Sched.
- **Water Conservation Area 3** - At Sched.
- **ENP** - Normal seasonal conditions
- **Fl. Bay** - Normal seasonal conditions
- **Upper East Coast** - Norm. groundwater
- **Lower East Coast** - Norm. groundwater
- **Lower West Coast** - Norm. groundwater

Hydrologic Conditions
Upper Kissimmee Basins

- All lakes are near or below their regulation schedule
  - This situation is in response to recent dry conditions and rising regulatory schedules
  - Currently making small environmental releases to the Kissimmee River from Lake Kissimmee
  - Preparing for Lake Toho Drawdown to start Nov. 1

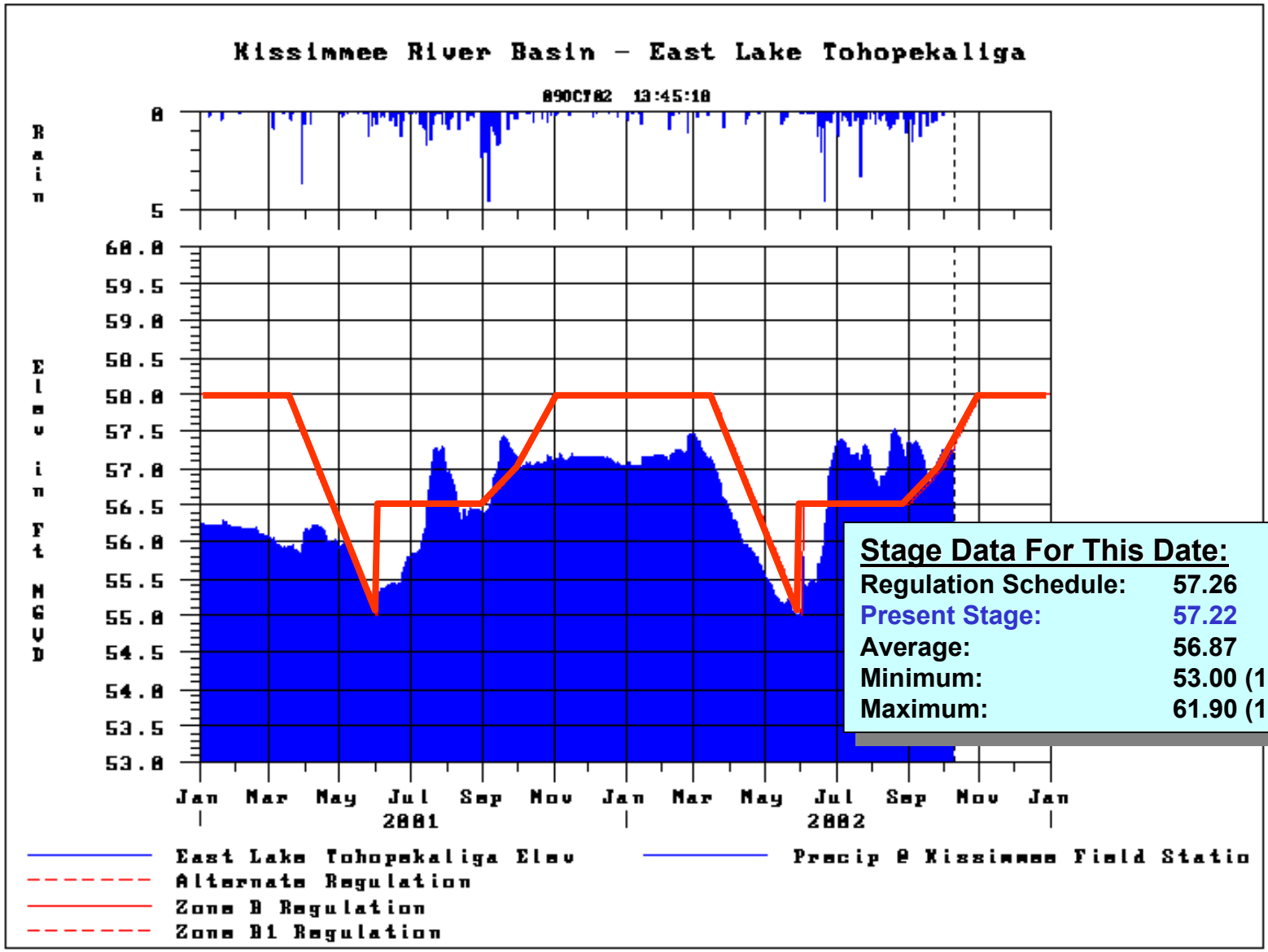


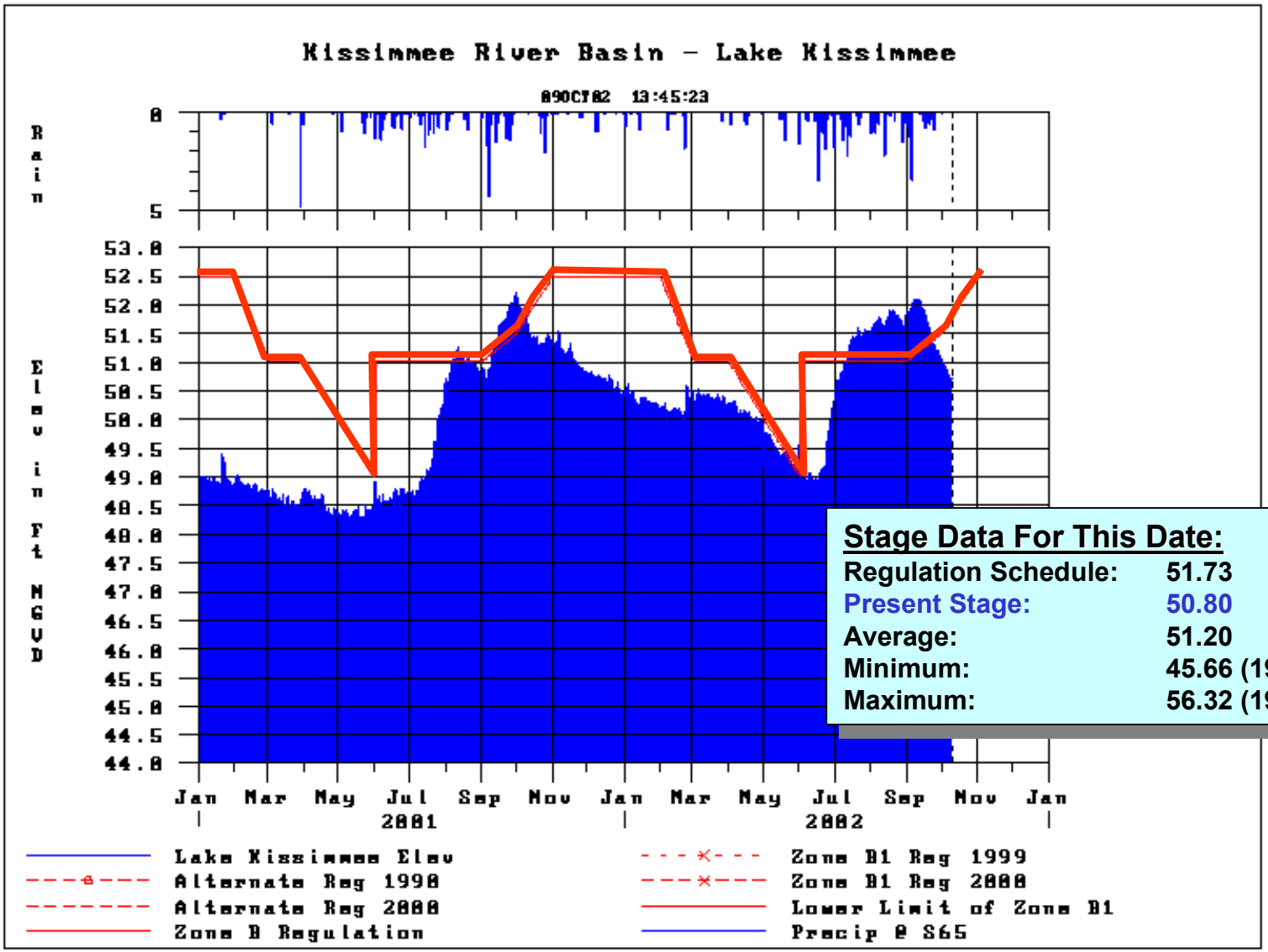

Kissimmee - Lakes Trout, Coon, Center, Lizzie & Alligator
09OCT02 13:45:21
Rain
Elev in Ft NGVD
0
5
65
64
63
62
61
60
59
58
57
56
55
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2001
2002
Stage Data For This Date:
Regulation Schedule: 63.29
Present Stage: 63.33
Average: 63.12
Minimum: 60.21 (2000)
Maximum: 66.30 (1960)
Lake Alligator Elev
S-68 Elev-Head
S-58 Elev-Head
Alternate Regulation
Temporary Deviation
Zone B Regulation
Precip @ Kissimmee Field Statio



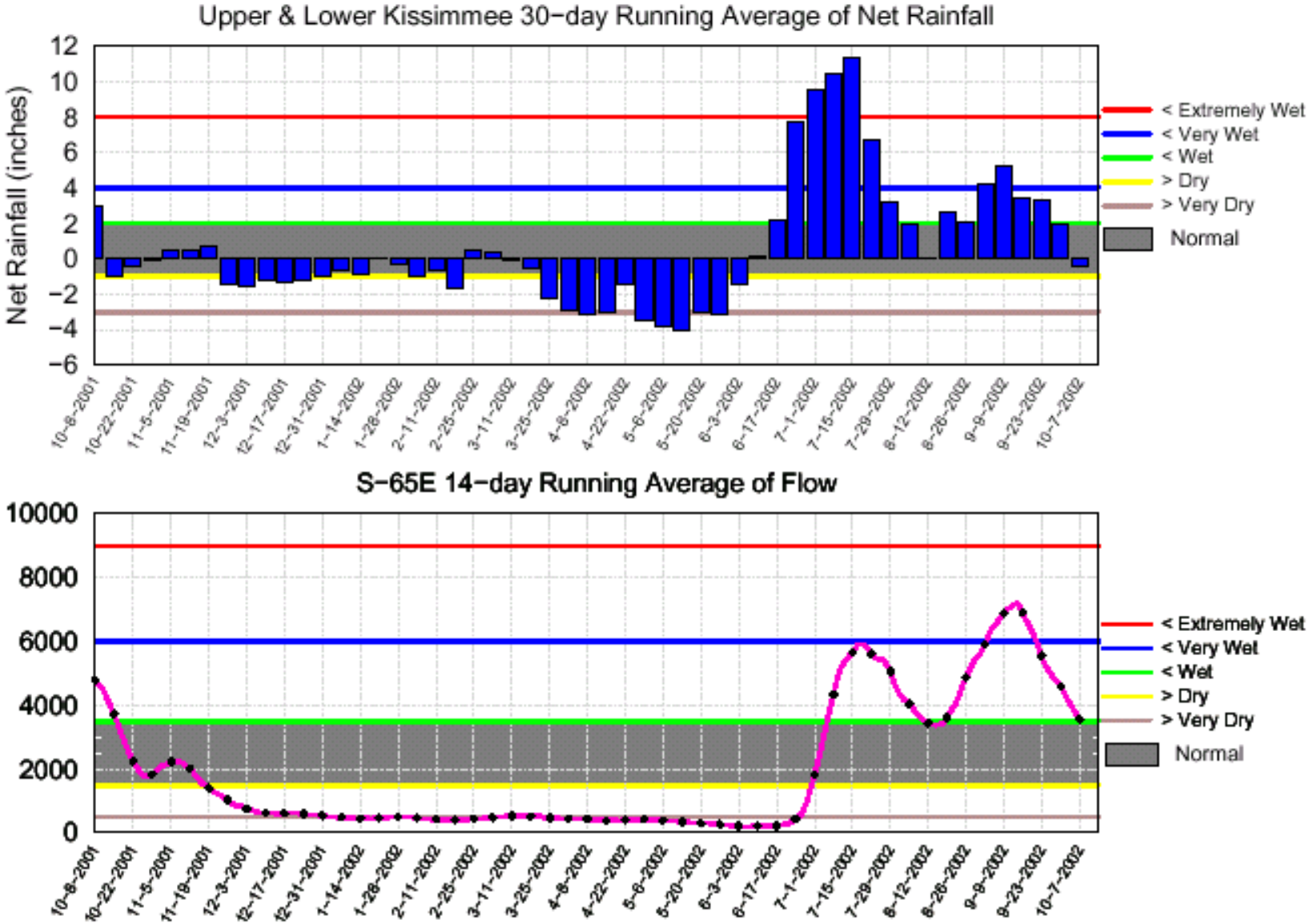
Stage Data For This Date:

Regulation Schedule:	54.23
Present Stage:	54.47
Average:	54.10
Minimum:	50.16 (1971)
Maximum:	58.88 (1960)


Kissimmee River Basin - East Lake Tohopekaliga
09OCT02 13:45:18
Rain
0
5
Elev in Ft NGVD
60.0
59.5
59.0
58.5
58.0
57.5
57.0
56.5
56.0
55.5
55.0
54.5
54.0
53.5
53.0
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2001
2002
Stage Data For This Date:
Regulation Schedule: 57.26
Present Stage: 57.22
Average: 56.87
Minimum: 53.00 (1961)
Maximum: 61.90 (1960)
East Lake Tohopekaliga Elev
Precip @ Kissimmee Field Statio
Alternate Regulation
Zone B Regulation
Zone B1 Regulation

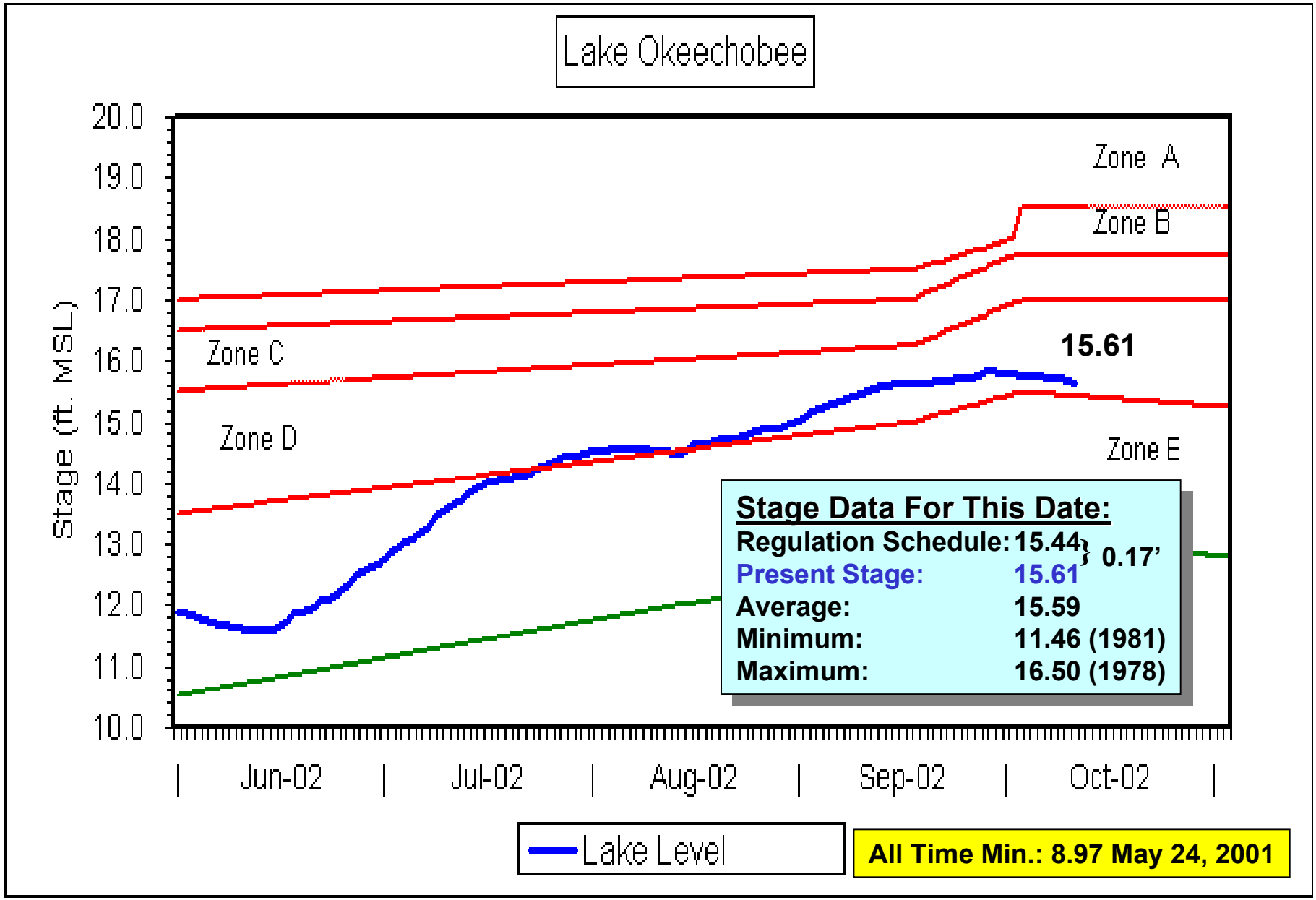

Kissimmee River Basin - Lake Kissimmee
09OCT02 13:45:23
Rain
Elev in Ft NGVD
0
5
53.0
52.5
52.0
51.5
51.0
50.5
50.0
49.5
49.0
48.5
48.0
47.5
47.0
46.5
46.0
45.5
45.0
44.5
44.0
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2001
2002
Lake Kissimmee Elev
Alternate Reg 1998
Alternate Reg 2000
Zone B Regulation
Zone B1 Reg 1999
Zone B1 Reg 2000
Lower Limit of Zone B1
Precip @ S65
Stage Data For This Date:
Regulation Schedule: 51.73
Present Stage: 50.80
Average: 51.20
Minimum: 45.66 (1956)
Maximum: 56.32 (1947)

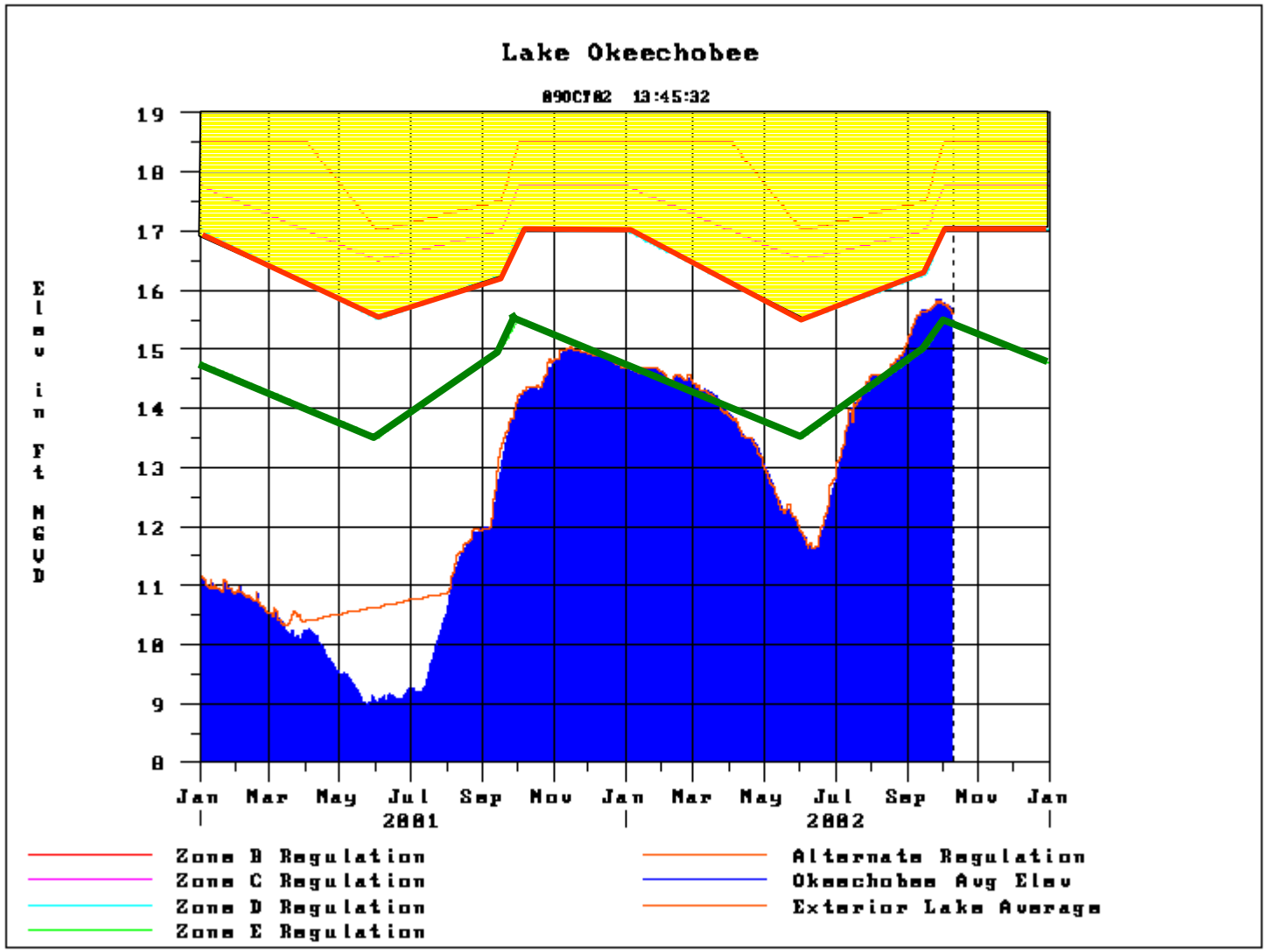
Tributary Basin Condition Indicators as of October 7, 2002



Hydrologic Conditions
Lake Okeechobee

- Lake Okeechobee stages have remained fairly stable over the past month
- Regulatory releases from the Upper Chain of Lakes and Kissimmee River inflows have reduced significantly
- Rainfall in the tributary basins has been below normal


Lake Okeechobee
Stage (ft. MSL)
20.0
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
10.0
Zone A
Zone B
Zone C
Zone D
Zone E
15.61
Stage Data For This Date:
Regulation Schedule: 15.44
Present Stage: 15.61
Average: 15.59
Minimum: 11.46 (1981)
Maximum: 16.50 (1978)
0.17'
Jun-02
Jul-02
Aug-02
Sep-02
Oct-02
Lake Level
All Time Min.: 8.97 May 24, 2001


Lake Okeechobee
890CT02 13:45:32
Elev in Ft NGVD
19
18
17
16
15
14
13
12
11
10
9
8
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan
2001
2002
Zone B Regulation
Zone C Regulation
Zone D Regulation
Zone E Regulation
Alternate Regulation
Okeechobee Avg Elev
Exterior Lake Average

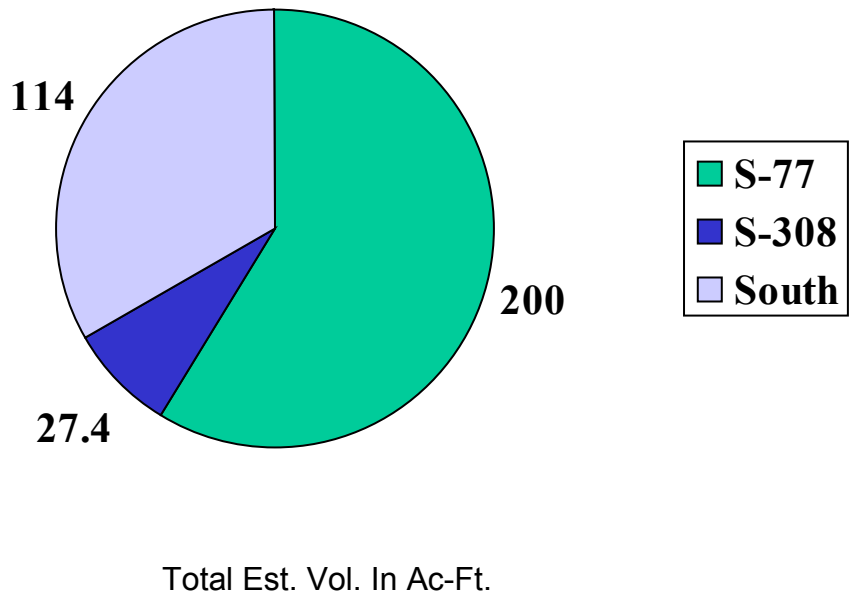
Lake Okeechobee Current Operations

- **Regulation Schedule**
  - **Stages presently in Zone D**
  - Above normal inflows
  - Normal rainfall
  - Normal seasonal forecast
  - Wet multi-seasonal forecast
- Required regulatory discharge to the WCAs
  - ~900 cfs to WCA-1
- Required regulatory discharge to estuaries
  - 3rd Level II Pulse Release initiated Saturday Oct. 5, 2002
  - 6 pulse releases since mid-July

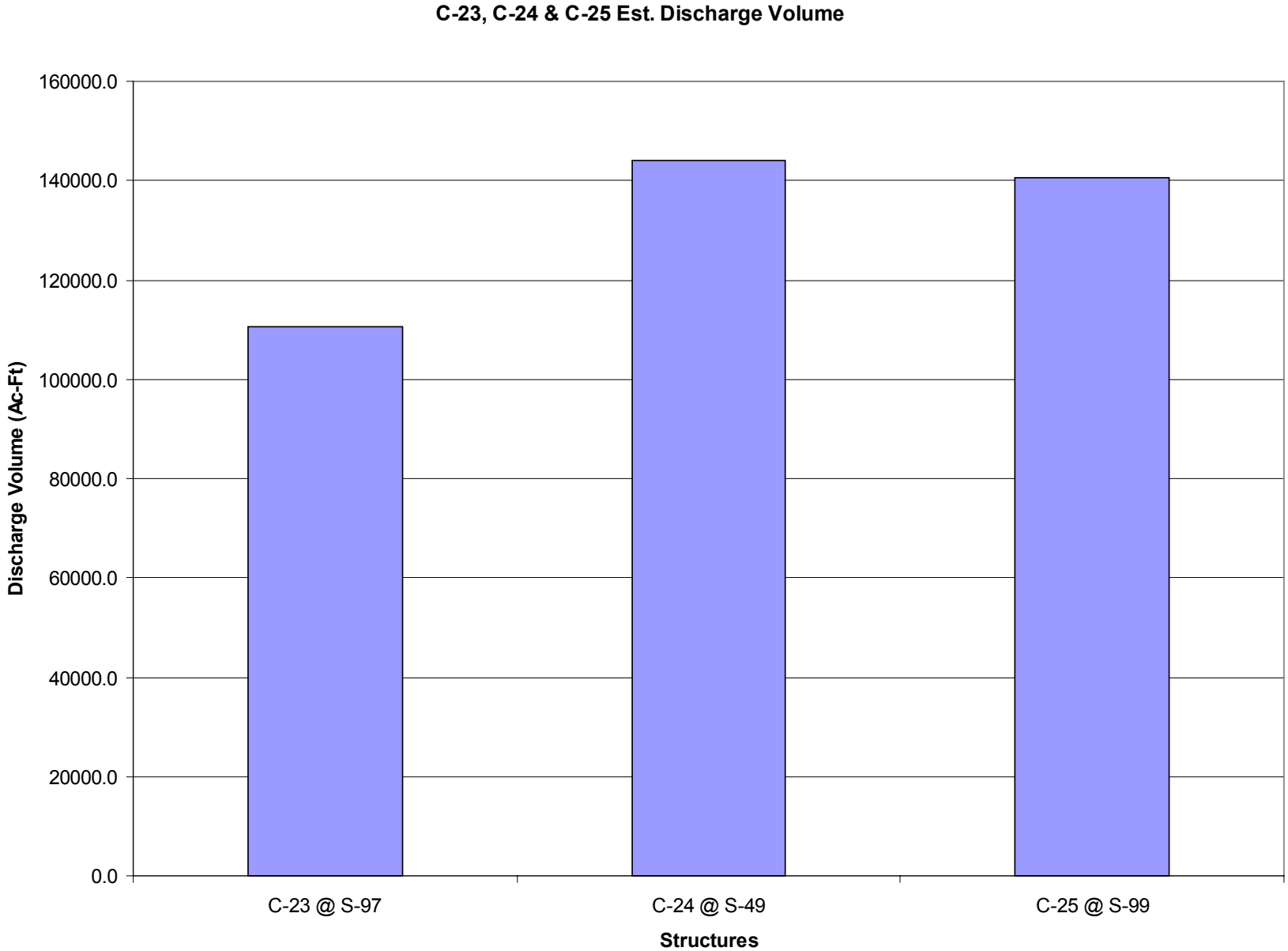
Lake Okeechobee Pulse Release Summary

- Est. Discharge Volume Totals (in equiv. depth)

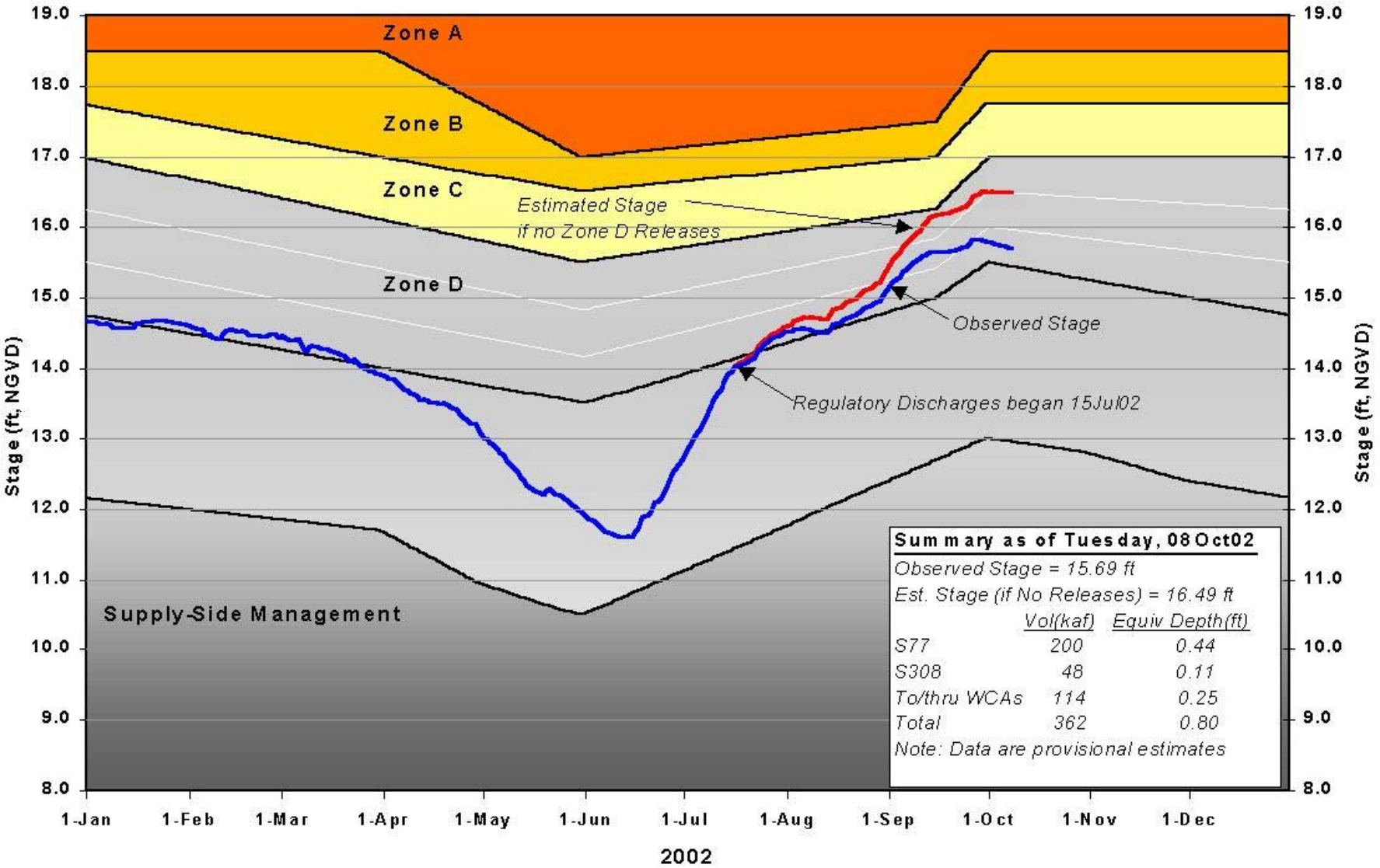
S-77	0.44 ft.
S-308	0.11 ft.
South	0.25 ft.
Total:	0.80 ft.



Total Est. Vol. In Ac-Ft.


C-23, C-24 & C-25 Est. Discharge Volume
160000.0
140000.0
120000.0
100000.0
80000.0
60000.0
40000.0
20000.0
0.0
Discharge Volume (Ac-Ft)
C-23 @ S-97
C-24 @ S-49
C-25 @ S-99
Structures

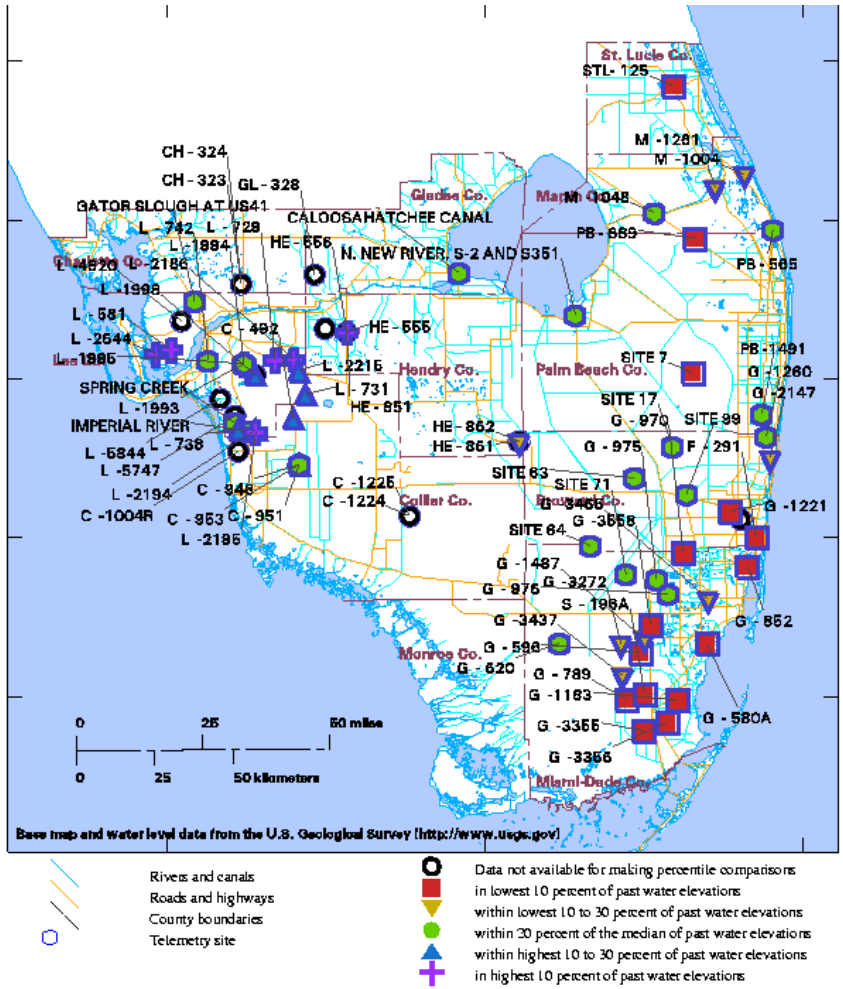
Lake Okeechobee Stage Comparison



Hydrologic Conditions

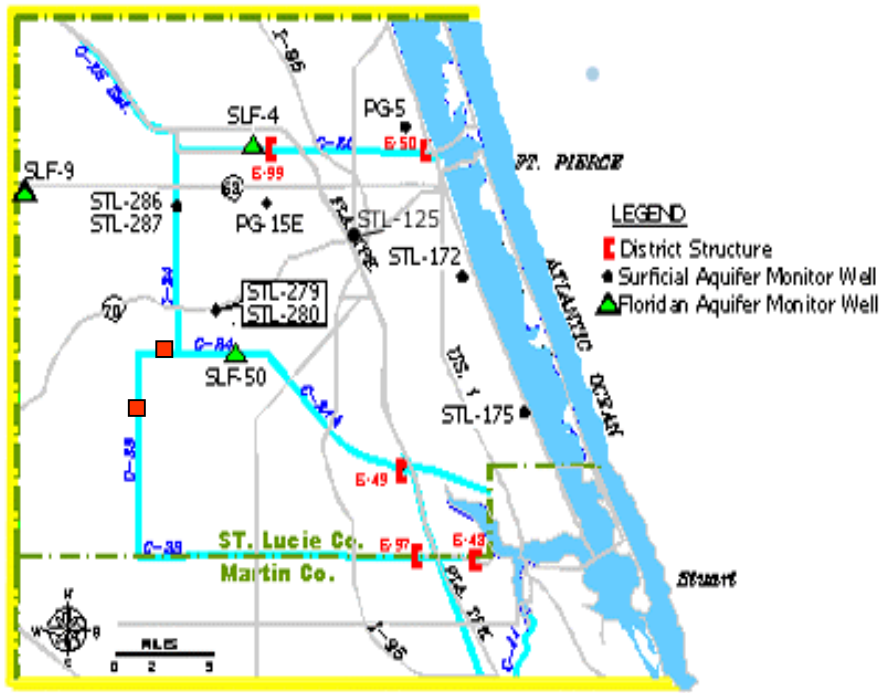
Groundwater Conditions

- Upper East Coast, Lower East Coast
  - Below normal seasonal levels
- Lower West Coast Region:
  - Above normal seasonal levels



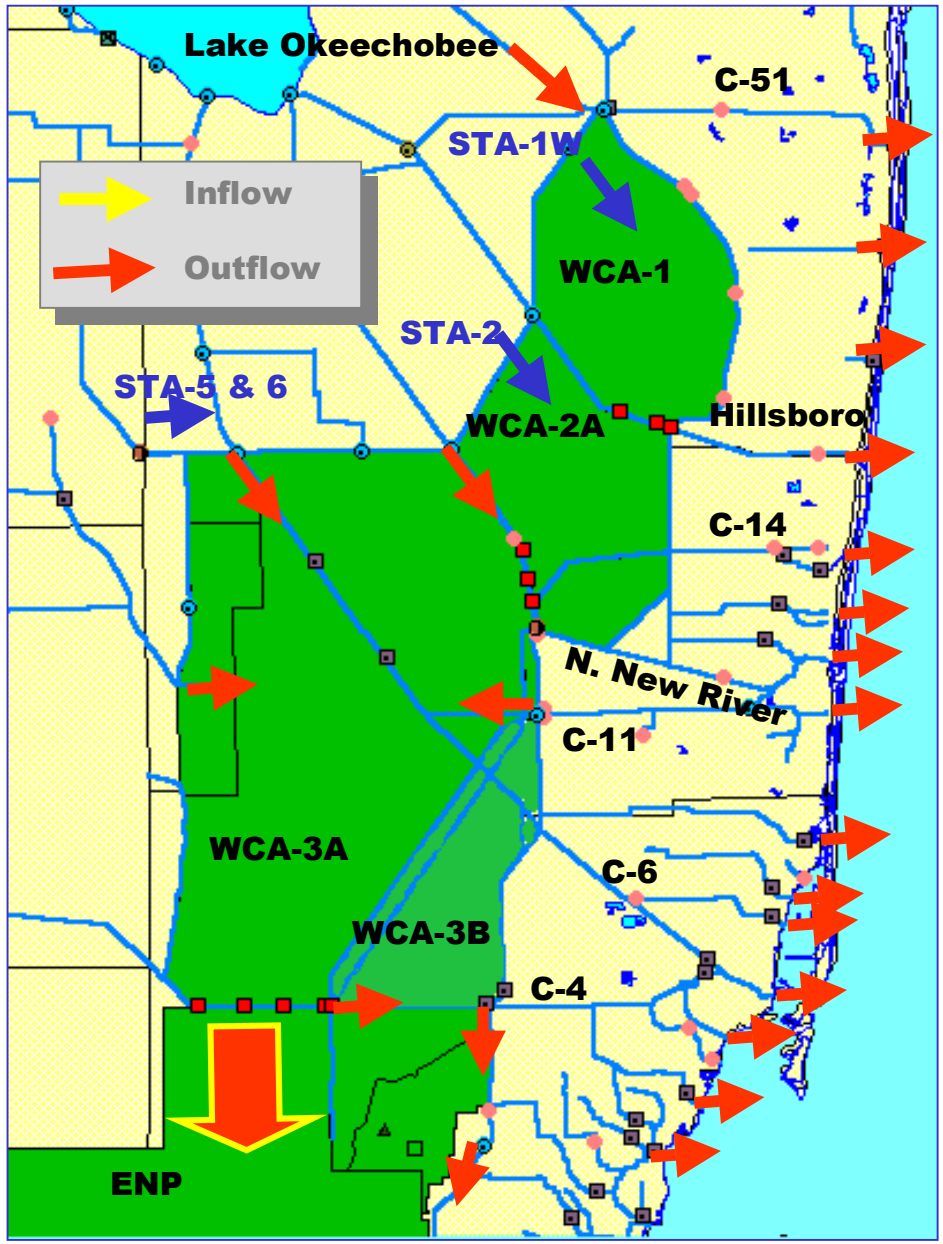
Upper East Coast

- Water levels in the C-23, C-24 & C-25 canals are normal
  - Flood discharges made over the past month in response to low rainfall



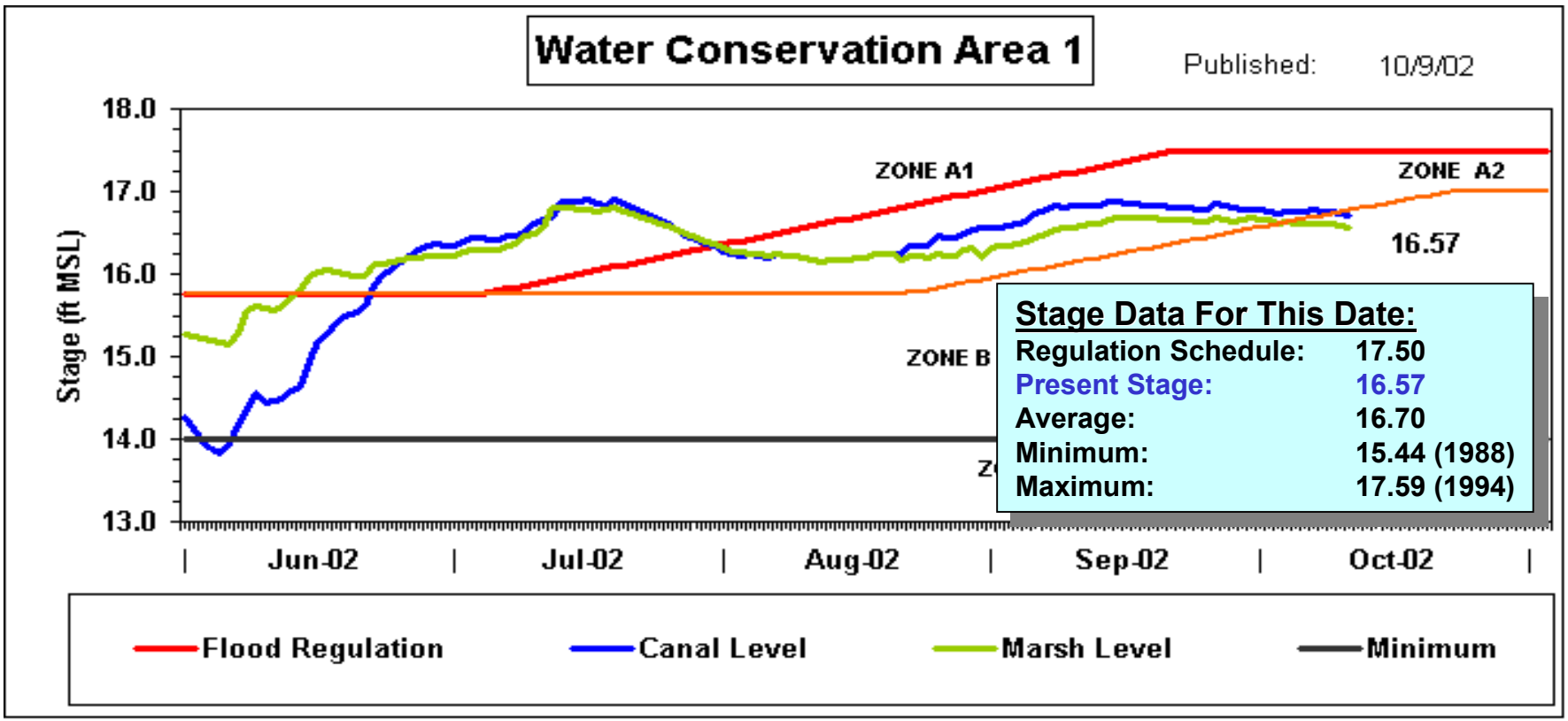
Water Conservation Areas

- WCA 3 stages are currently above regulation schedules
  - Regulatory releases currently being made
- Regulatory releases from Lake Okeechobee is being treated by STA-1W and released to WCA-1



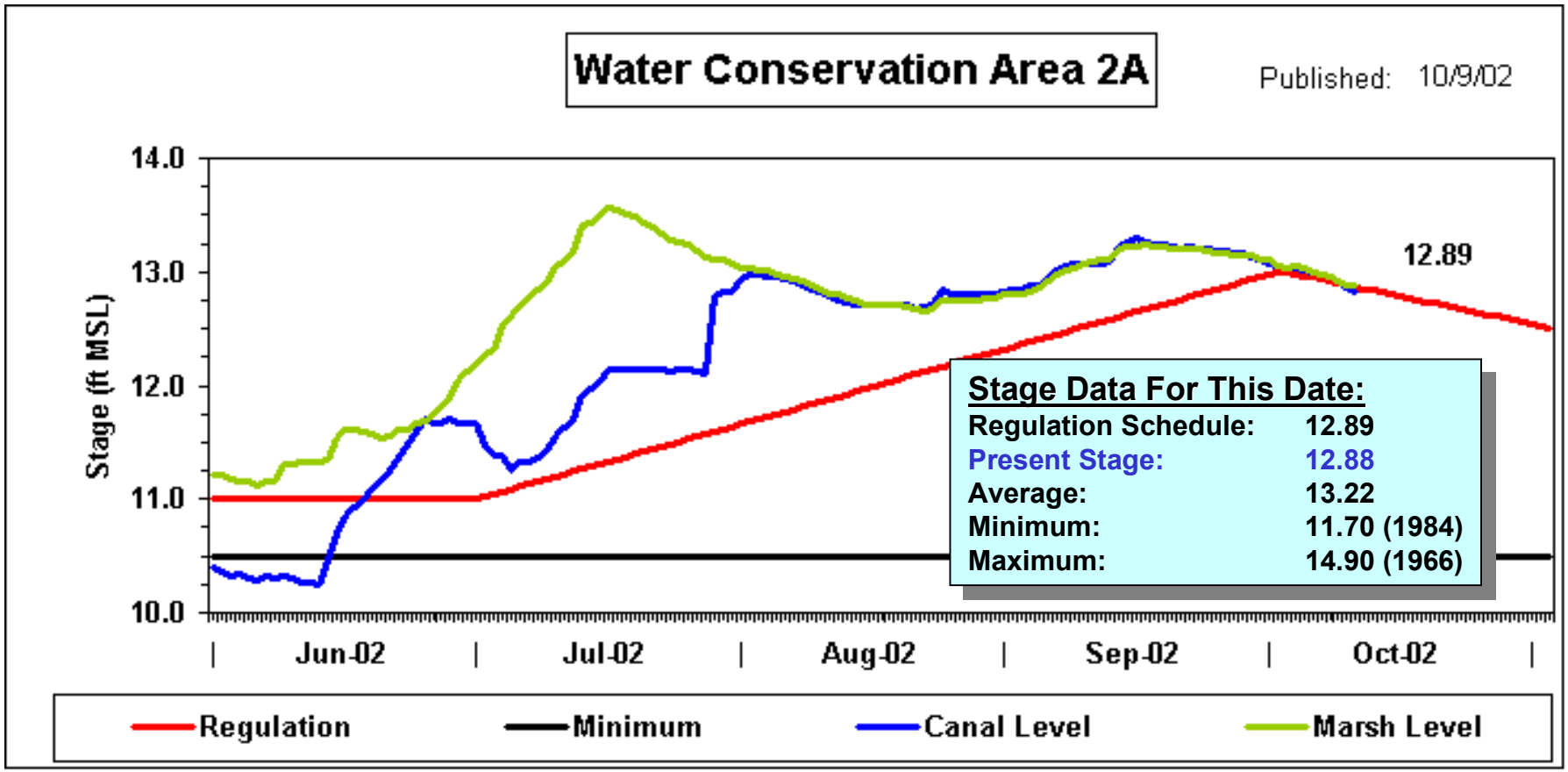
Hydrologic Conditions
Water Conservation Areas

- Stages fallen below regulatory schedule
  - Allowed regulatory releases from Lake Okeechobee



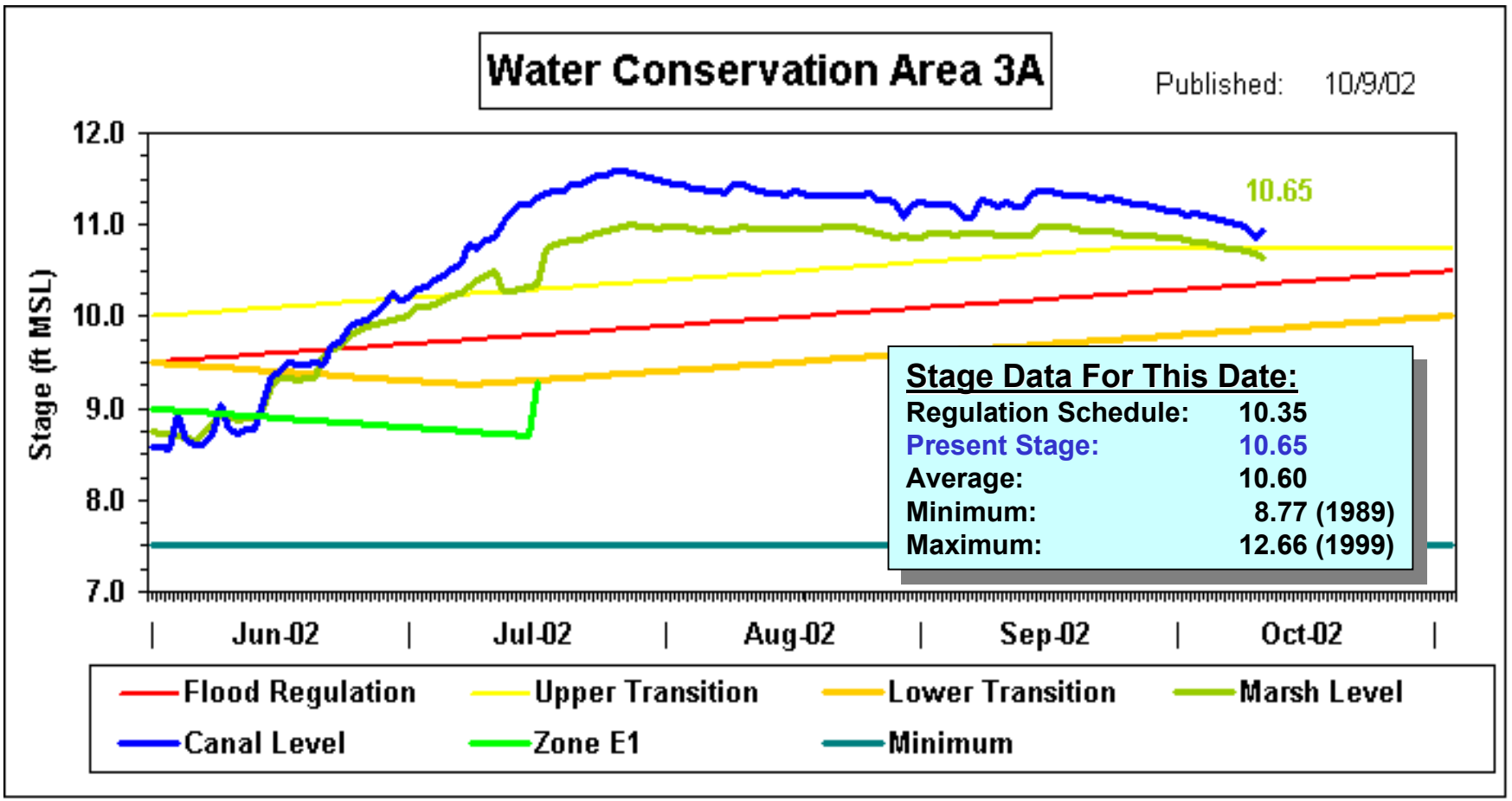
Hydrologic Conditions
Water Conservation Areas

- Below regulation schedule through October to-date



Hydrologic Conditions
Water Conservation Areas

- Stages transitioning out of Zone A of regulation schedule

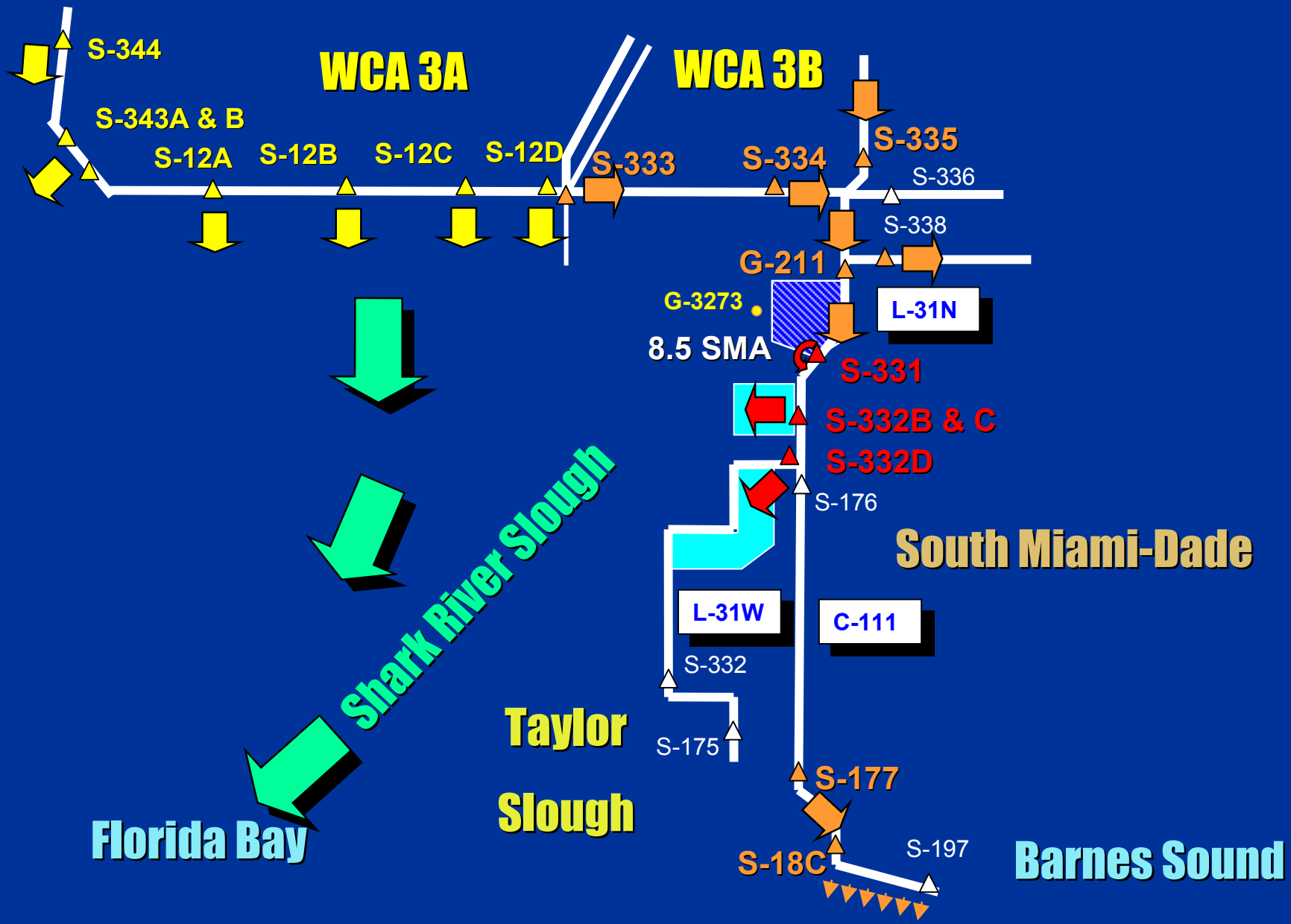


Hydrologic Conditions

SDCS Current Operations

- Following IOP criteria initiated in early August
- WCA-3A stages receding below regulation schedule
- Current operations focused to transition to higher canal operating stages in accordance with the IOP criteria.
  - Current dry conditions and new pumping capacity should mitigate short-term reduction in flood protection capability
  - IOP provides flexibility to make necessary flood control adjustments in advance of heavy rains

SDCS - IOP 2001 October Operations

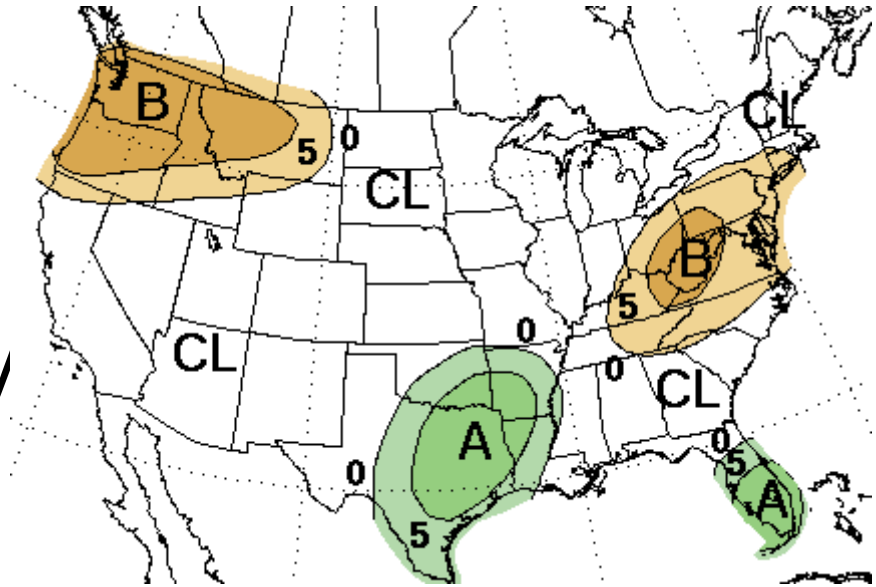


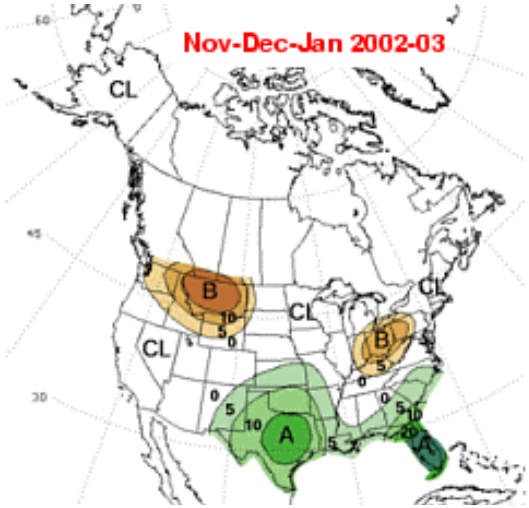
Climate Outlook

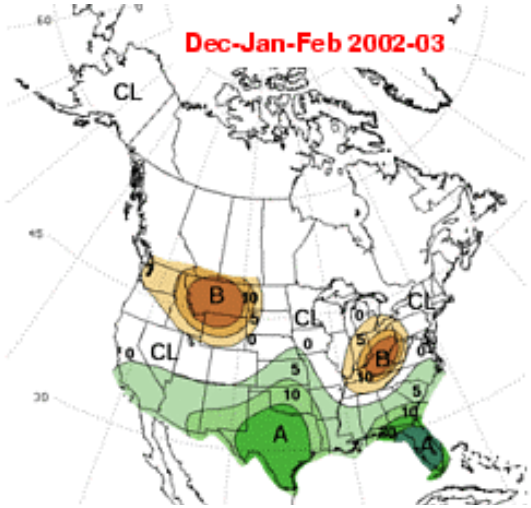
Governing Board Presentation - October 10, 2002

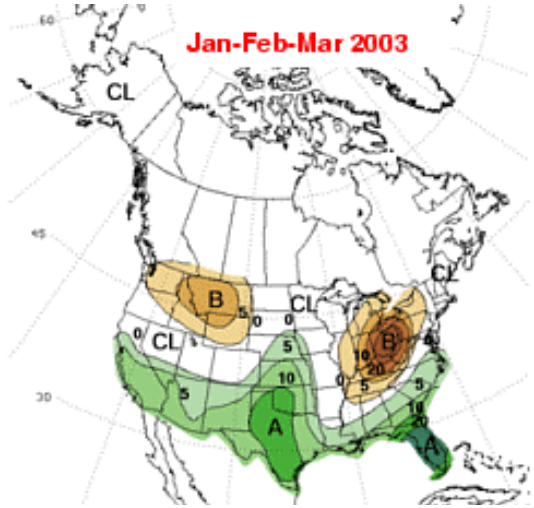
Seasonal Climatic Outlook

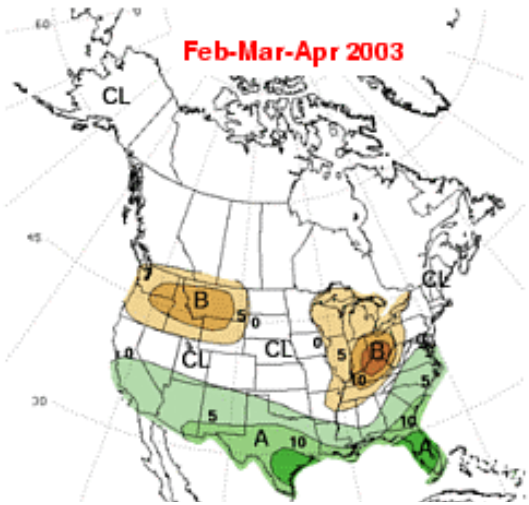
- CPC reports that the period from October through December 2002 has a slightly increased probability for above average precipitation

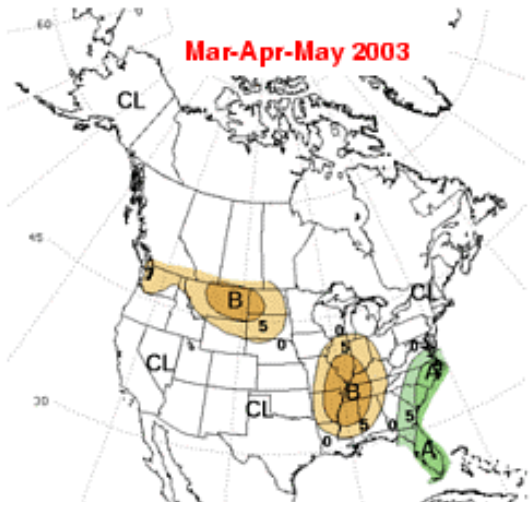


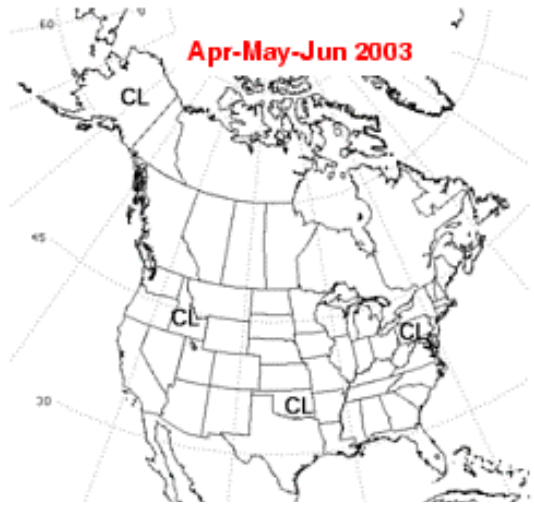

Nov-Dec-Jan 2002-03
CL
B
A


Dec-Jan-Feb 2002-03
CL
B
A


Jan-Feb-Mar 2003
CL
B
A


Feb-Mar-Apr 2003
CL
B
A


Mar-Apr-May 2003
CL
B
A

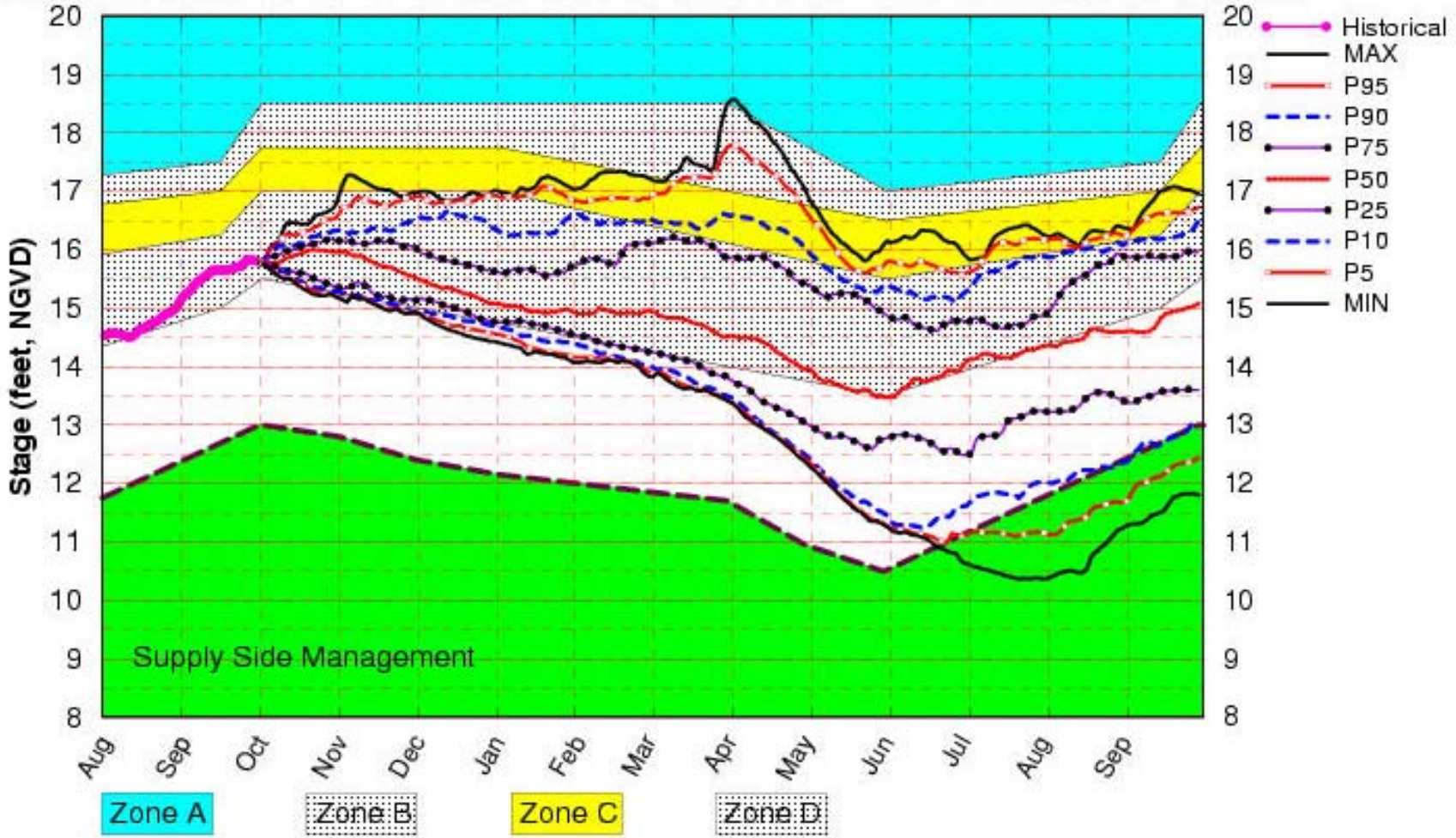

Apr-May-Jun 2003
CL

Hydrologic Outlook

Governing Board Presentation - October 10, 2002

Lake Okeechobee SFWMM Oct 2002 Position Analysis

R13_2 Unconditional PA (See assumptions @ http://www.sfwmd.gov/org/pld/hsm/sfwmm_pa.html)

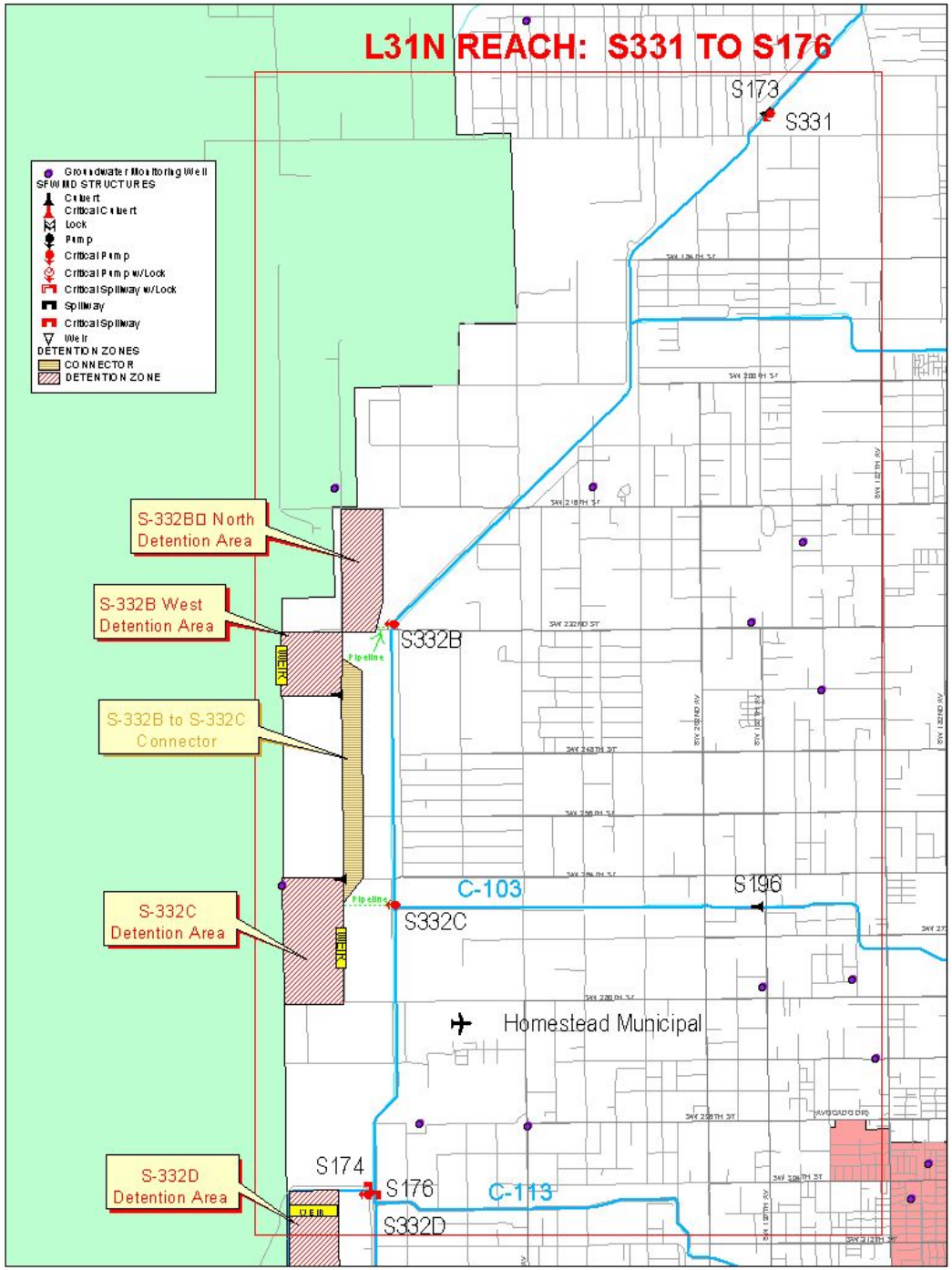


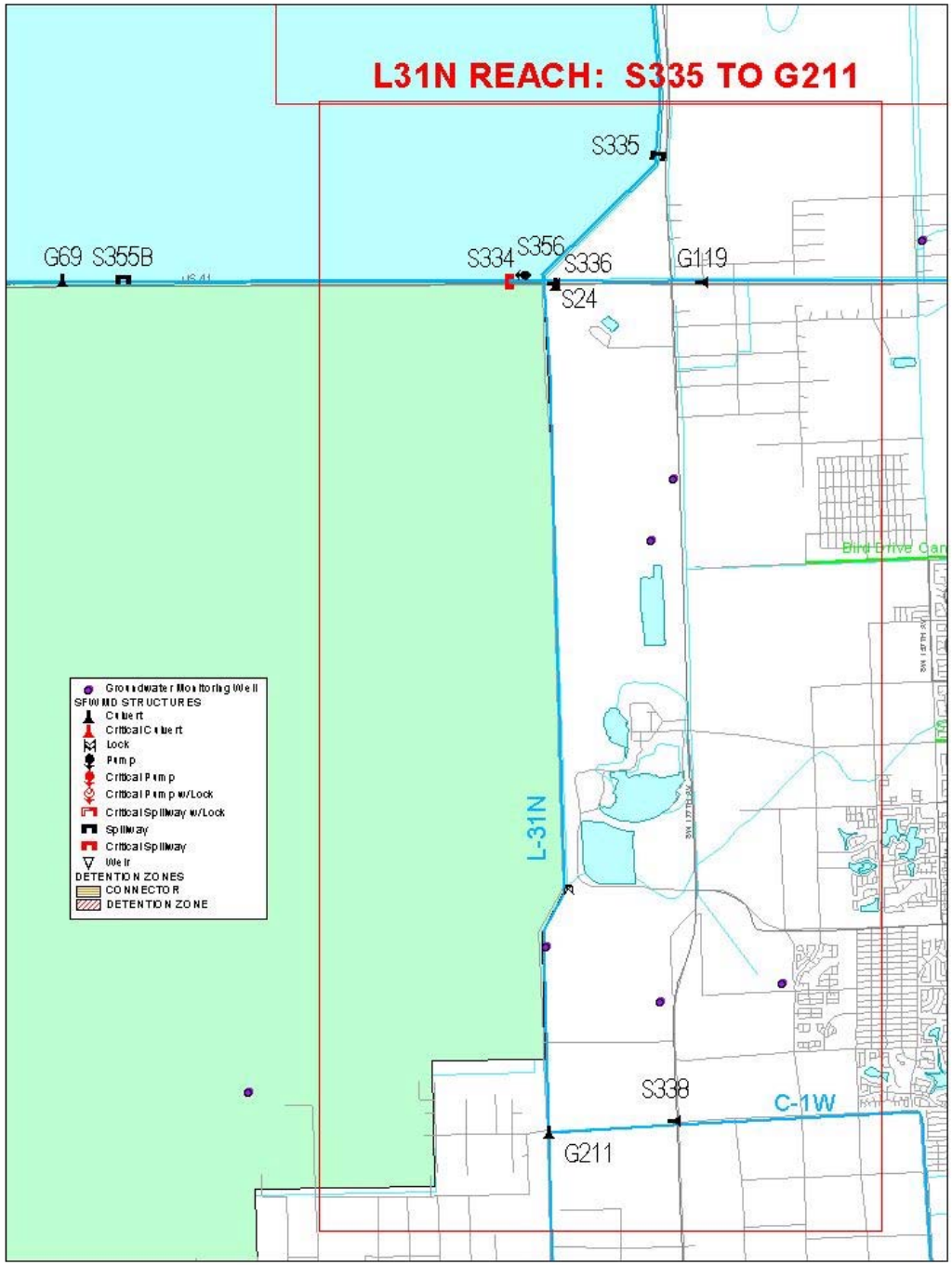
Mon Oct 7 19:37:58 2002

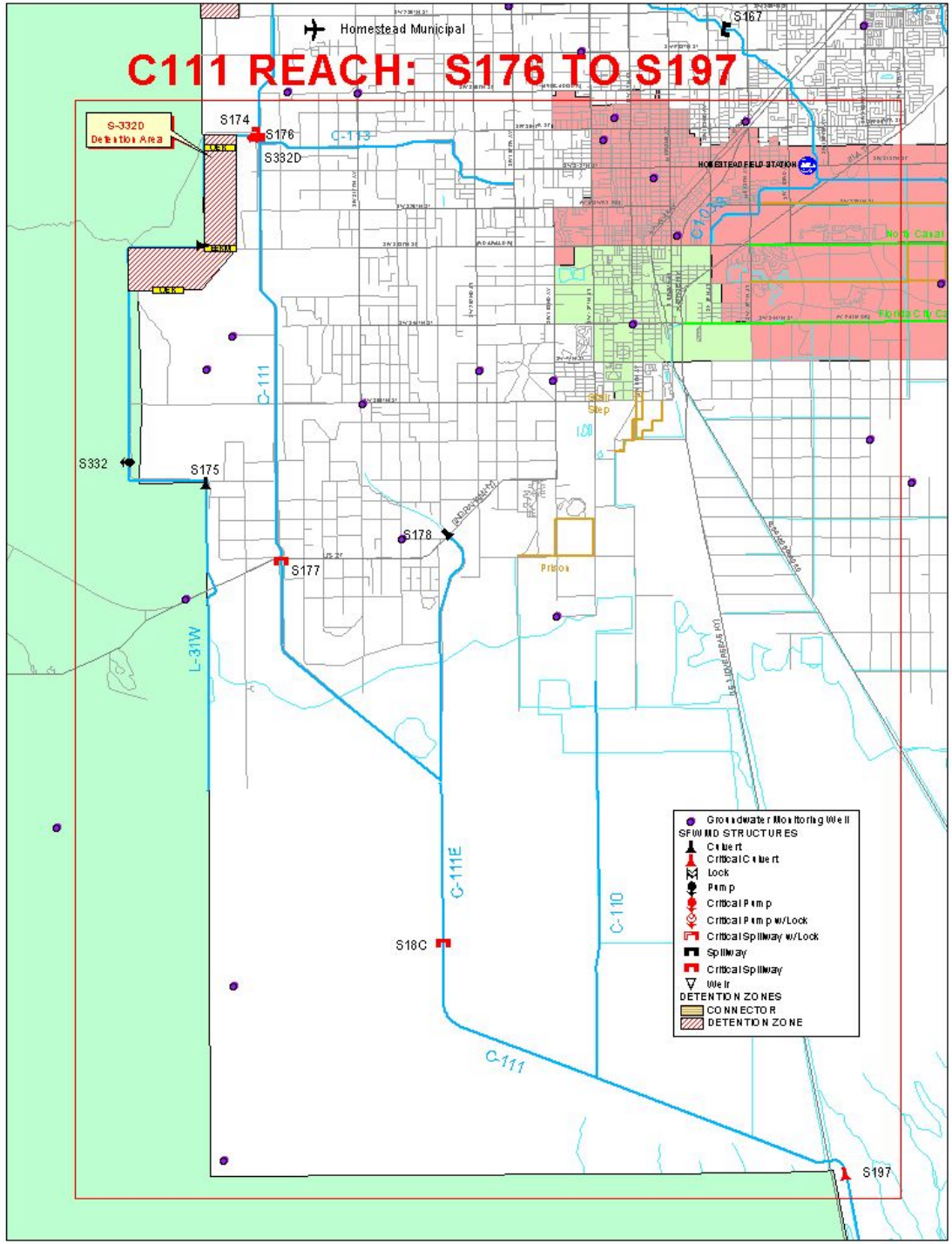
Lake Okeechobee Operational Outlook

- Lake is slowly falling - However, heavy rains in late October are typical
- Near normal tributary conditions and local rainfall
- The lake regulation schedule will lead USACE to temporarily cease Pulse Releases to the Caloosahatchee and St. Lucie Estuary
  - Currently in a 10-day Level II Pulse Cycle (ends on 10/14)
  - Pulse releases could resume if rainfall or tributary inflows rise into their “wet” categories
- Significant probability that stages will be in Zone D through February

Governing Board Presentation - October 10, 2002

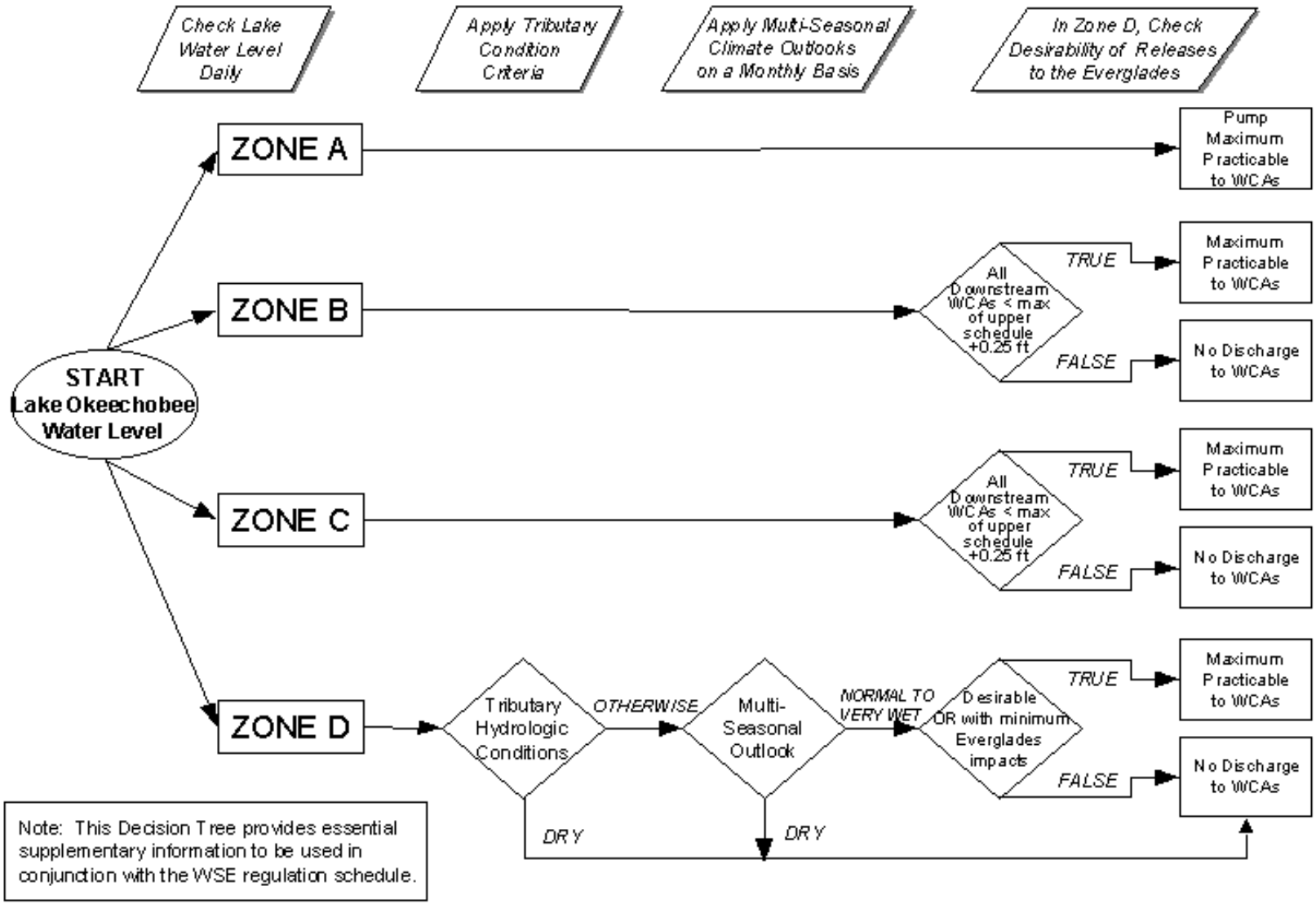

L31N REACH: S331 TO S176
S173
S331
Groundwater Monitoring Well
SFWMD STRUCTURES
Culvert
Critical Culvert
Lock
Pump
Critical Pump
Critical Pump w/Lock
Critical Spillway w/Lock
Spillway
Critical Spillway
Weir
DETENTION ZONES
CONNECTOR
DETENTION ZONE
S-332B North Detention Area
S-332B West Detention Area
S-332B to S-332C Connector
S-332C Detention Area
S-332D Detention Area
S332B
S332C
S332D
WEIR
Pipeline
C-103
C-113
S196
S174
S176
Homestead Municipal


L31N REACH: S335 TO G211
S335
G69
S355B
S334
S356
S336
G119
S24
L-31N
S338
C-1W
G211
Groundwater Monitoring Well
SFWMD STRUCTURES
Culvert
Critical Culvert
Lock
Pump
Critical Pump
Critical Pump w/Lock
Critical Spillway w/Lock
Spillway
Critical Spillway
Weir
DETENTION ZONES
CONNECTOR
DETENTION ZONE


C111 REACH: S176 TO S197
Homestead Municipal
S167
S174
S176
S332D
S-332D
Detention Area
C-113
HOMESTEAD FIELD STATION
C-102
North Canal
Florida City Ca
C-111
Spoil
Step
S332
S175
S178
S177
Prison
L-31W
C-111E
C-110
S18C
C-111
S197
Groundwater Monitoring Well
SFWMD STRUCTURES
Culvert
Critical Culvert
Lock
Pump
Critical Pump
Critical Pump w/Lock
Critical Spillway w/Lock
Spillway
Critical Spillway
Weir
DETENTION ZONES
CONNECTOR
DETENTION ZONE

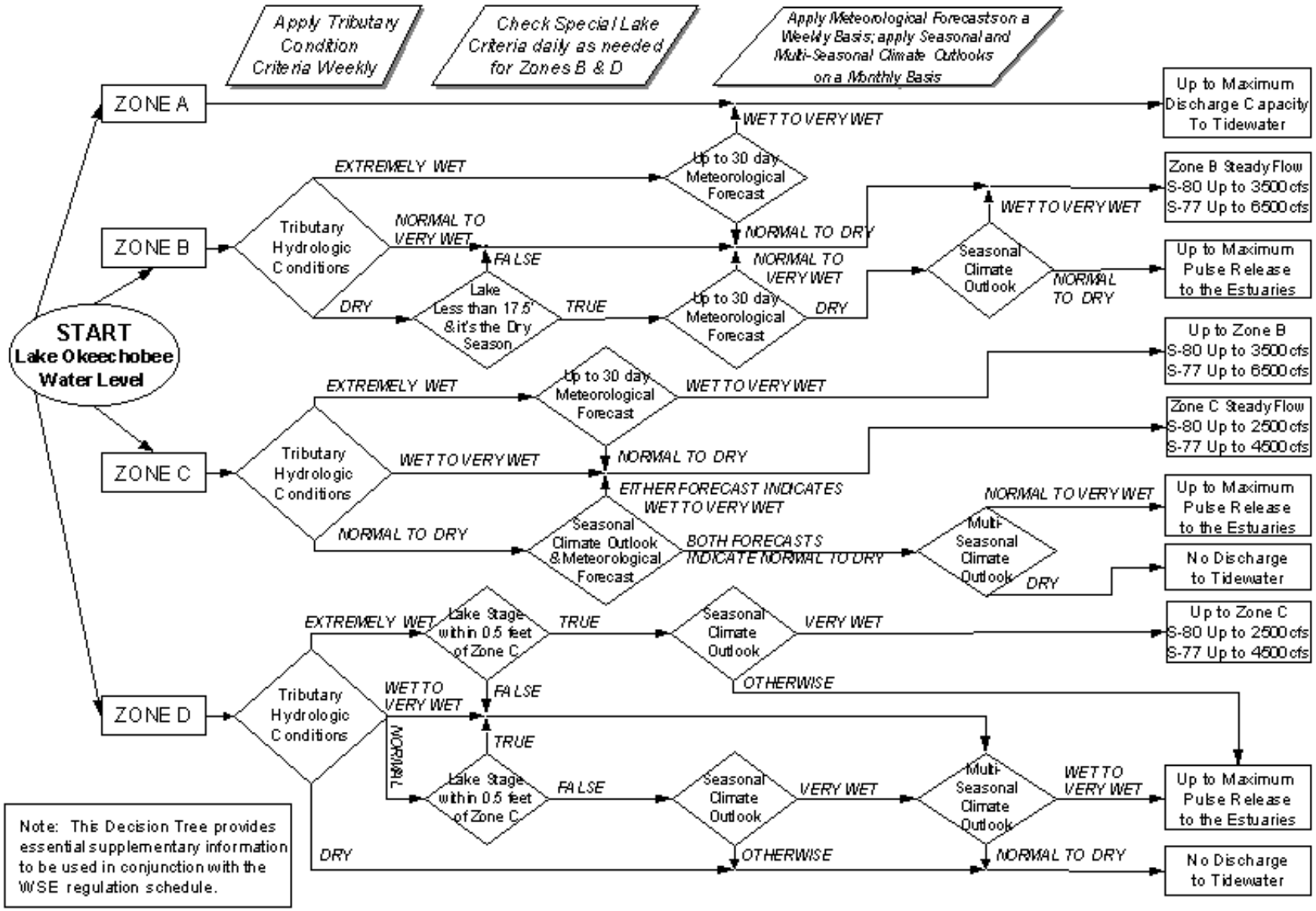
WSE Operational Guidelines Decision Tree

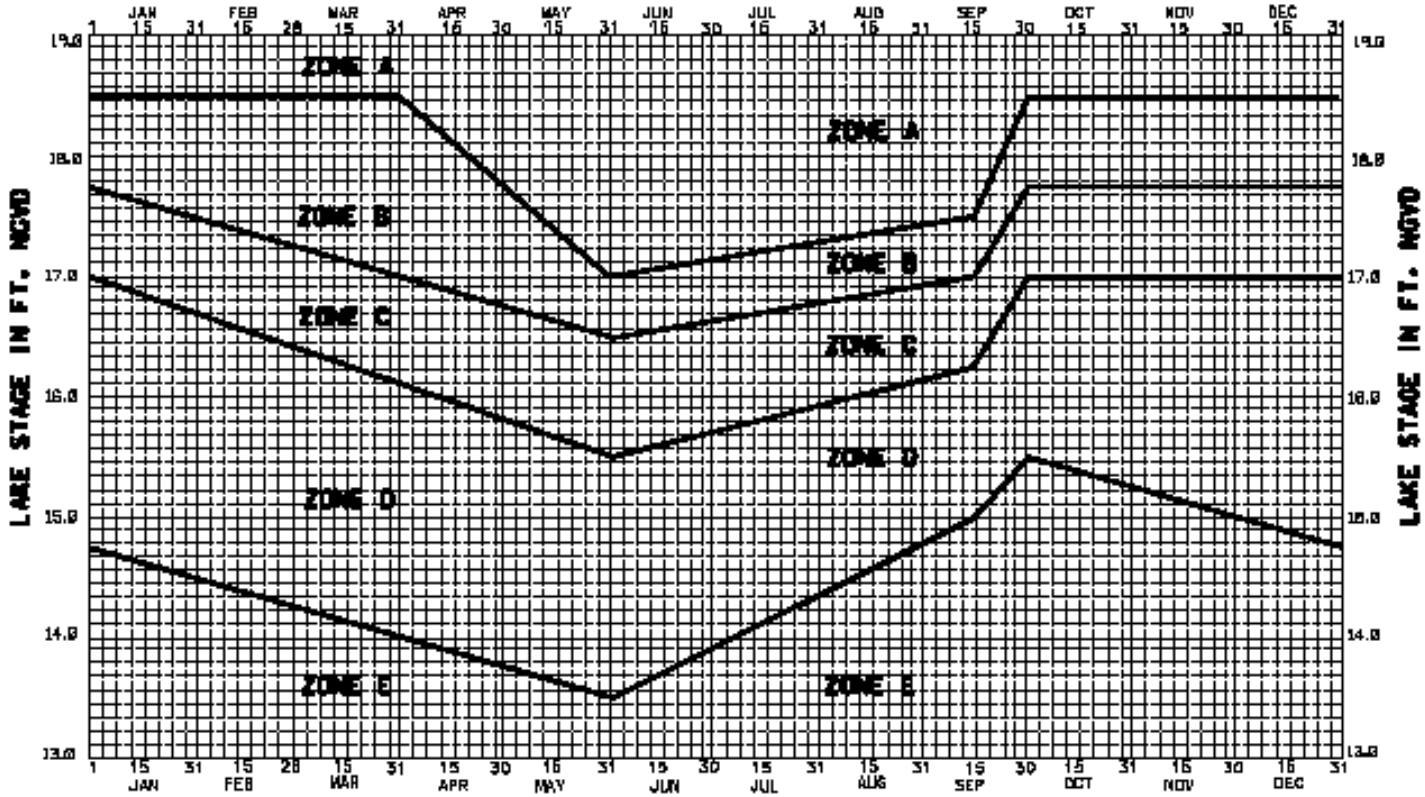
Part 1: Define Lake Okeechobee Discharges to the Water Conservation Areas



WSE Operational Guidelines Decision Tree

Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)





RELEASE THROUGH OUTLETS AS INDICATED

ZONE	AGRICULTURAL CANALS To WCAs (1,2)	CALOOSAHATCHEE RIVER AT S-77 (1,2,4)	ST. LUCIE CANAL AT S-80 (1,2,4)
A	PUMP MAXIMUM PRACTICABLE	UP TO MAXIMUM CAPACITY	UP TO MAXIMUM CAPACITY
B (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM MAXIMUM PULSE RELEASE UP TO MAXIMUM CAPACITY)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM MAXIMUM PULSE RELEASE UP TO MAXIMUM CAPACITY)
C (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 6500 CFS)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 3500 CFS)
D (3,5)	AS NEEDED TO MINIMIZE ADVERSE IMPACTS TO THE LITTORAL ZONE WHILE NOT ADVERSELY IMPACTING THE EVERGLADES. (SEE NOTE 5.)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 4500 CFS)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 2500 CFS)
E	NO REGULATORY DISCHARGE	NO REGULATORY DISCHARGE	NO REGULATORY DISCHARGE

NOTES: (1) SUBJECT TO FIRST REMOVAL OF RUNOFF FROM DOWNSTREAM BASINS
(2) GUIDELINES FOR WET, DRY AND NORMAL CONDITIONS ARE BASED ON: 1) SELECTED CLIMATIC INDICES AND TROPICAL FORECASTS AND 2) PROJECTED INFLOW CONDITIONS. RELEASES ARE SUBJECT TO THE GUIDELINES IN THE WSE OPERATIONAL DECISION TREE, PARTS 1 AND 2.
(3) RELEASES THROUGH VARIOUS OUTLETS MAY BE MODIFIED TO MINIMIZE DAMAGES OR OBTAIN ADDITIONAL BENEFITS. CONSULTATION WITH EVERGLADES AND ESTUARINE BIOLOGISTS IS ENCOURAGED TO MINIMIZE ADVERSE EFFECTS TO DOWNSTREAM ECOSYSTEMS.
(4) PULSE RELEASES ARE MADE TO MINIMIZE ADVERSE IMPACTS TO THE ESTUARIES
(5) ONLY WHEN THE WCAs ARE BELOW THEIR RESPECTIVE SCHEDULES

CENTRAL AND SOUTHERN FLORIDA
INTERIM REGULATION SCHEDULE
LAKE OKEECHOBEE

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT
CORPS OF ENGINEERS, JACKSONVILLE, FLORIDA
DATED: 5 NOVEMBER 1999

WSE (WITH CLIMATE OUTLOOK)

Pulse Releases - Three Levels

Table 7-11 Master Water Control Plan for Lake Okeechobee

Day of Pulse	Level I		Level II		Level III	
	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)	St. Lucie S-80 (cfs)	Caloos. S-77 (cfs)
1	1200	1000	1500	1500	1800	2000
2	1600	2800	2000	4200	2400	5500
3	1400	3300	1800	5000	2100	6500
4	1000	2400	1200	3800	1500	5000
5	700	2000	900	3000	1000	4000
6	600	1500	700	2200	900	3000
7	400	1200	500	1500	600	2000
8	400	800	500	800	600	1000
9	0	500	400	500	400	500
10	0	500	0	500	400	500
Average Flow	**730**	**1600**	**950**	**2300**	**1170**	**3000**
Volume (Ac-Ft)	14,480	31,736	18,843	45,621	23,207	59,505
*Equivalent Depth (ft)	0.03	0.07	0.04	0.10	0.05	0.13

*Volume-Depth conversion based on average lake surface area of 467000 acres